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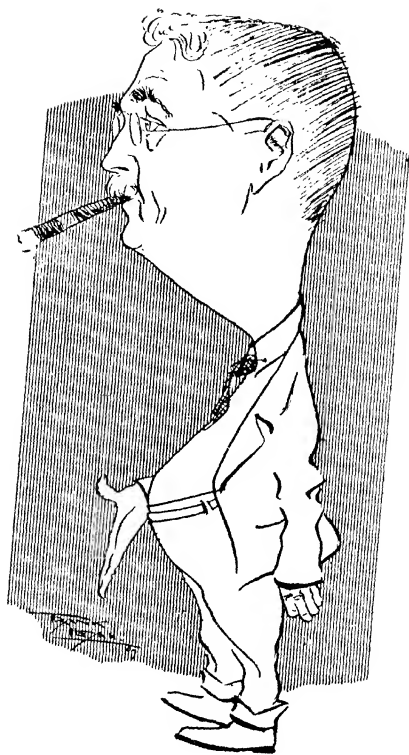
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THE ROMANCE OF JUTE

A SHORT HISTORY OF THE CALCUTTA
JUTE MILL INDUSTRY :: 1855—1927

BY

D. R. WALLACE

Late of the Howrah and Reliance Jute Mills, Calcutta

SECOND EDITION

REVISED AND BROUGHT UP TO DATE WITH 30 ILLUSTRATIONS
AND MAP.

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“To those who look forward with hope to an industrial revolution in India, the bright side of the picture is not to be sought in the village at all, but in those manufacturing centres which have sprung into life in recent years, and in which industry is organised upon completely modern lines.”—*The Economic Transition in India*, THEODORE MORRISON.

DEDICATION

So much of sameness pervades stories of the evolution of industrial enterprises, they are apt to pall. But to those who have played a part, however humble, in the earlier stages of an industry claiming a clean record of benefit to the people of India, the glamour never wanes.

This revised edition is dedicated to the remnant of all who worked with or against him during a long sojourn on the banks of the Hooghly by—

The writer who'll be West, before

Some future scribe takes up the score.

Yet still, what'er the Ebb may bring,

The tang of Bengal jute shall cling.

D. R. WALLACE.

1927.

PREFACE

A little more than ninety years ago Dundee flax and hemp spinners used to guarantee their products "free from Indian jute." Then, in 1838, the value of jute yarn was discovered and the Dundee jute industry was born. Seventeen years later, in 1855, the first spinning machinery was brought out to Calcutta from Dundee, the first mill was established on land once owned by Warren Hastings, and the first machine-spun jute yarns produced. Eight tons a day was the product in the beginning. It is now 4,800 tons a day, or more than eight times the produce of the parent in Dundee. In the place of that one mill there are to-day 59 companies and 84 mills, with over 50,000 looms and 1,050,000 spindles. In 1850-1 the value of jute to India, as represented by the exports of the raw and (native) manufactured material was a little over forty-one lakhs. In 1926-7 the value was seventy-eight and a half crores of rupees, over 62 per cent. of the total value of the merchandise exported from Bengal, value of the manufactured material alone

being fifty-three crores. Such has been the growth of the jute industry of Calcutta within the space of seventy odd years, and India owes an incalculable debt to the energy, enterprise and ability of those men who, since the days of Ackland the pioneer, have built up this industry out of the native resources of Bengal, to the profit and honour of India and of themselves. The story of the birth and growth of the industry, which forms an important chapter in the romantic history of Indian commerce, is set forth in these pages, the earlier portion of which, now revised, first appeared in the old *Empire Evening News*, Calcutta.

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ERRATA.

Page xii, Appendices:

List of Chairmen, Indian Jute Mills Association should read page 107.

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AS IT WAS IN THE BEGINNING

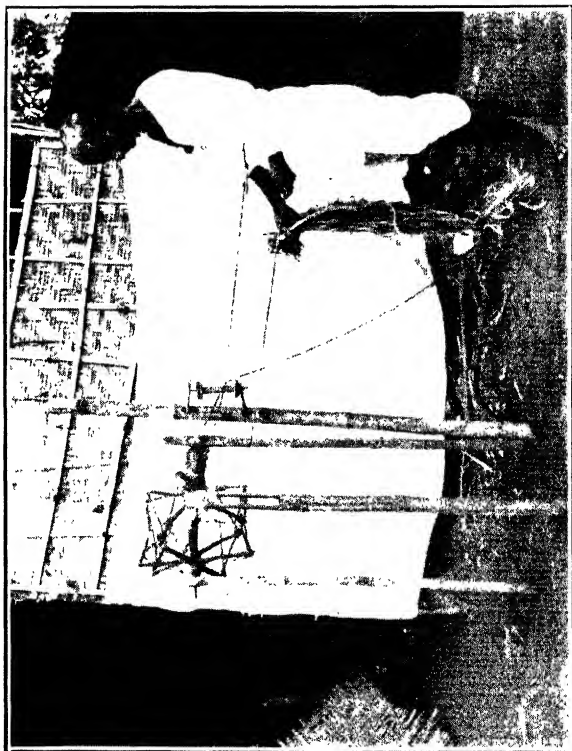
Jute spinning was extensively practised by the natives of India centuries before the British occupation. The spun yarn was used for lines and cordage, also for bedding cloth, screens, matting, garments for the poorer people, and many other domestic purposes throughout India, including bags for handling sugar, coffee, grain and other produce. Spinning was performed on primitive bamboo-wood contrivances operated by hand, and the cloth, warp and woof, woven by an equally crude process into short lengths called chutees, later gunnies, suitable for bags, etc. The industry was and is still, but on a very much smaller scale, confined to Bengal chiefly among the peasantry and fisher folk.

In the first quarter of last century cloth and

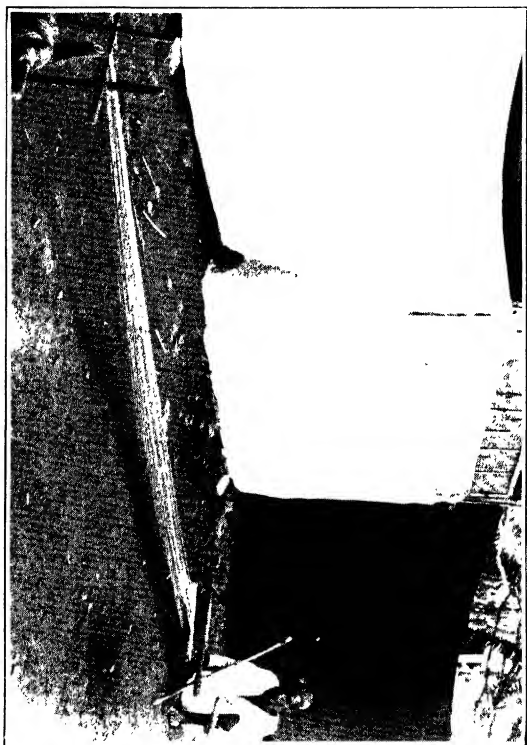
bags came to be exported in quantity to Java, Borneo and other neighbouring ports ; also for country exports of sugar, coffee and other produce. Further demands quickly followed, principally for cotton packing cloth or bags for America and Bombay coast ports. For shipment the cloth pieces and bags were packed in ropebound bales in wooden presses operated by manual labour.

Dr. Forbes Royle in his admirable work, *Fibrous Plants of India*, published in 1855, quotes from a Calcutta merchant named Henley, the following vivid picture of the native industry and the importance it had then acquired in supplying markets outside of India with hand-loom gunny cloth and bags :

“The great trade and principal employment of jute is for the manufacture of gunny chuts or chuttees, i.e., lengths suitable for making bags. This industry forms the grand domestic manufacture of all the populous eastern districts of Lower Bengal. It pervades all classes, and penetrates into every household. Men, women and children find occupation therein. Boatmen in their spare moments, husbandmen, palankeen-carriers and domestic servants ; everybody in fact, being Hindus—for Mussulmans spin cotton only—pass their leisure moments, distaff in hand, spinning gunny twist.”



NATIVE-HAND SPINNING



NATIVE LOON

1 "Its preparation together with the weaving into lengths, forms the never-failing resource of that most humble, patient and despised of created beings, the Hindoo widow, saved by law from the pyre, but condemned by opinion and custom for the remainder of her days, literally to sackcloth and ashes, and the lowest domestic drudgery in the very household where once, perhaps, her will was law. This manufacture spares her from being a charge upon her family—she can always earn her bread. Amongst these causes will be discerned the very low prices at which gunny manufactures are produced in Bengal, and which have attracted the demand of the whole commercial world. There is, perhaps, no other article so universally diffused over the globe as the Indian gunny bag. All the finer and long-stapled jute is reserved for the export trade, in which it bears a comparatively high price. The short staple serves for the local manufactures and it may be remarked, that a given weight of gunny bag may be purchased at about the same price as a similar weight of raw material leaving no apparent margin for spinning and weaving."

The following table taken from the same work gives an idea of the extent and distribution of the exports of gunny cloth and bags from Calcutta in 1850-1, also exports of raw jute for the same year :

B

| Exports to | | | | Jute. *Mds. | Gunnies and gunny cloth. Nos. |
|------------------------------|-----|-----|-----|----------------|---|
| United Kingdom | ... | ... | ... | 768,945 | 69,636 |
| France | ... | ... | ... | 13,931 | — |
| Hamburg | ... | ... | ... | 128 | 2,180 |
| North America | ... | ... | ... | 9,242 | 2290,427 |
| Coast of Coromandel | ... | ... | ... | 598 | 1955,150 |
| Malabar | ... | ... | ... | — | 2054,075 |
| Penang and Singapore | ... | ... | ... | — | 1043,600 |
| Ceylon | ... | ... | ... | — | 357,290 |
| New South Wales | ... | ... | ... | 54 | 32,125 |
| Trieste | ... | ... | ... | 401 | — |
| Java | ... | ... | ... | — | 242,550 |
| Pegu | ... | ... | ... | — | 672,950 |
| Mauritius | ... | ... | ... | — | 213,980 |
| Cape of Good Hope | ... | ... | ... | — | 82,750 |
| Guam | ... | ... | ... | — | 15,000 |
| Arabian and Persian Gulfs... | ... | ... | ... | — | 4,000 |
| Total | | | | 793,299 | 9035,713 |
| Value | | | | Rs. 1,970,715 | Rs. 2,159,782 |

* One maund=82 lb.

CHAPTER II

DUNDEE JUTE INDUSTRY

Passing over some fugitive trials commencing about 1822, Dundee Flax Spinners' first real experiment with jute began a few years later, but met with poor success on the market, and "Warranted free from Indian Jute" became a common condition of business. It was not till 1838 that they managed to solve the necessary treatment, partly perhaps to batching with whale oil, to suit the nature of the fibre; and by adjusting their machinery, succeeded in turning out marketable goods. From that date, as the flax industry waned, they waxed fat on jute. Had the generations who came after them been less conservative and displayed more of the hardy perseverance and business acumen of their forbears—as the world's requirements grew and outside competition threatened—Dundee, while she would probably still have lost the pride of place the earlier spinners built up for her in the jute world, might have held to-day a prouder

place in the industry, India's peculiar advantages notwithstanding. The glorious times in which the home industry revelled during and after the Crimean, followed by the American Civil War, blinded the leaders when serious competition arose.

By a singular course of accidents, seventeen years after the home industry's success with jute began, the first jute spinning mill was erected in India. By this time, 1855, Dundee mills were successfully competing with a finer texture than the native article, in the supply of cotton packing cloth to Bombay.

CHAPTER III

THE PIONEER SPINNING MILL (INDIA)

Prior to 1855 Dundee jute spinners and manufacturers had already made fortunes, but it was left to an Englishman in that year to introduce jute spinning machinery to the Hooghly.

George Ackland began his career in the Navy. Quitting the East India Marine Service, he took to coffee planting in Ceylon, where he amassed a large fortune and was for some time a non-official member of the Legislative Council. In the early 'fifties of last century misfortune stepped in. Leaving Ceylon with a remnant of his fortune, he arrived in Calcutta in 1852-3, where he made the acquaintance of Baboo Bysumber Sen, a native banian (financial agent).

Gravitating to Serampore, at which place, by the way, there was then a boat ferry across to Barrackpore connecting the Calcutta side with the Grand Trunk Road to Delhi for all manner of passenger and goods traffic. This important station, Serampore, was, and had been long

before the English took over the Settlement from the Danes in 1845 (under whose rule it was known as Fredericksnagar), a noted centre of the native industry in hand-spun jute and s \bar{a} n hemp. It may be noted in passing that Cobbler Carey, of ever-blessed memory, who established the Baptist Mission there at the beginning of last century, found employment for families of the mission converts in the local industry, which was in full swing when Ackland appeared. But what first drew him to the district was the experiments then being tried with country grasses and fibre plants to improve the quality of paper and cheapen manufacturing costs at the paper mill established by John Marshman, son of the missionary who worked with Carey. This was the first paper mill erected in India.

JUTE BLEACHING AND RHEA FIBRE

Ackland's genius first caught on to bleaching jute for shipment to Dundee. In order to carry out the scheme he acquired a piece of land from the Weatherall family at Rishra below Serampore. This land formed the upper part of the garden retreat property once owned by Warren Hastings.

Pending reports on samples of bleached

material sent to Dundee, Ackland, financed by the native banian, made a start in the hand spinning industry. He also interested himself in the retting and degumming of the indigenous rhea plant in the hope of adapting the fibre as a superior rival to jute, and secured a concession to plant rhea in patches on the margins of the East India Railway track then under construction.

The bleaching scheme turned out a failure, but Ackland persevered with the spinning business, and when in 1854 fair supplies of cloth were being imported from home to Bombay in competition with the native cotton packing cloth, he turned his attention to spinning machinery. To carry out the project and at the same time to prove the rhea idea, he sent samples of the fibre, and also hand-spun jute yarns, to Mr. John Capper, journalist, then in London, but whom Ackland had known in his prosperous Ceylon days, requesting him to submit them for opinion and institute inquiries regarding spinning machinery.

FIRST MACHINERY ORDERED

Capper interviewed John Kerr, of the Douglas Foundry, Dundee, then the leading light in the construction of jute and flax preparing and spinning machinery. Of the rhea, Kerr said :

“Tough, gummy stuff like that could never be made to compete commercially with flax, hemp or jute. It would be better to stick to jute.”

He then advised as to shafting and machinery, and orders were placed with his firm for a baby mill.

Kerr also undertook to select an expert Dundee mill overseer to start and run the mill. The expert chosen was Robert Finlay, who had been manager at James Neish's Coldside Mill. Neish was one of the first and leading Dundee advocates of jute.

Finlay, with his two boys John and Andrew, arrived at the Sandheads on October 25th, 1854, after a passage via the Cape of 104 days in the old sailing ship *City of Manchester*. In those days there were no river steam tugs, but the old Hooghly pilots, expert sea dogs, were a very superior white kid-gloved body of men, who took over command of the ships at the Sandheads and sailed them up to the Calcutta moorings. It may be mentioned here that Finlay's son John is still with us, and to him the writer is indebted for the emendation of certain early incidents referred to in the 1909 edition of *The Romance of Jute*.

Ackland's two sons Charles and Fred joined the Rishra party a few months after the Finlays.

The first machinery to arrive in December, 1854, consisted of the following :

1 Teazer.

1 Finisher Card.

4 Drawing Frames.

2-8 in. Rovings, 48 spindles each.

2-5 in. Spinning Frames, 48 spindles each.

There was no intermediate breaker card, the teased tow being spread direct into the finisher.

When the balance of the machinery order arrived shortly afterwards, the full complement was four finishers with proportionate other frames. The first driving engine was a second-hand one bought from a sugar refinery—side lever 14 in. cylinder 3 ft. stroke.

Ackland himself superintended the buildings, which did not take long to erect. Here, then, about the middle of 1855, the first Indian machine jute spinning mill was cradled. From this modest beginning, giving an output of 8 tons per day, the industry now turns out in weight over 4,800 tons, and in length over 8,000 miles of cloth daily. For three years Ackland carried on the business in company with his native partner, adding small additions gradually to the spinning machinery and put in a number of hand frame looms, the better to cope with the demand for cloth.

THE MUTINY

When the mutiny broke out at Barrackpore in 1857, Mr. Ackland became nervous about the safety of his property and conceived the idea of soliciting the military authorities to provide an armed guard. With this object he dispatched his son Charles with one of the mill assistants to put his request before General Hearsey, then in command at Barrackpore. After hearing their message the General said : " Go back and tell your master there is as much chance of the rebels looting his place as there is of them cutting my throat." The General's assurance was not good enough for Ackland. He hired a number of seamen from the Sailors' Home in Calcutta and armed them with muzzle-loading shot guns to guard his property along with the European staff of the mill.

FIRE AND LATER VICISSITUDES

In 1858 the mill was completely destroyed by fire—machinery and all stocks of goods and raw material. Ackland was on holiday in England at the time, and, when the news reached him, lost no time in placing orders in Dundee for the renewal of the machinery on a larger scale. But at this juncture he lacked foresight in failing to

order power looms, together with loom preparing—winding and beaming—machinery, thus giving a later mill two or three years' start. He did order *one* trial loom which, however, they failed to make use of with the yarn made at the mill, and it was put aside until the omission of loom preparing was made good and power looms installed.

With two or three additional overseers the mill was restarted and worked as a private company—the Ischera Yarn Mills—with fair success till 1862. By this time, Ackland, having seen what was being done at Barnagore, put in power looms and formed the concern into a limited liability company—the Rishra Jute Mills Co. Ltd.—of which he became managing director, with a Mr. Chas. Smith as works manager, and Messrs. Borradaile Schiller and Co. the managing agents. Success followed, but with lavish expenditure, and the company landed in serious difficulties about 1867, when the Ackland interest ceased. The senior had retired to England in 1865, and the younger son to Australia about the same time. The elder son, Charles, struggled a few years with a coir ropery at Bidiabatty for a living, ultimately going into tea at Kumaon.

The mill was partially closed down for some time and the company suspended payment at

the end of 1868, when Messrs. Borradaile Schiller, who had a prior claim, took over the property. They made extensive alterations and restarted under the name of "The Calcutta Jute Mills Company Ltd." in 1872. The agency was transferred to Messrs. A. R. McIntosh and Co. in 1877.

About this time it was found necessary one week-end to draw the engine piston for repair. By an overlook the workmen left a hammer head in the cylinder before replacing the piston. On starting the engine on Monday morning the piston crashed through the end of the cylinder, wrecking the engine. Until the arrival of a new one from home, the works were kept partially going with half a dozen traction engines coupled to the shafting at various points. The company had a short career under the new agency and the works were ultimately taken over by the Champdany Company as their branch Wellington Mill.

The mill buildings have been changed out of all knowing since the Acklands' time, but the bungalow in which they lived still stands and is now occupied by the manager of the Wellington Mill. The garden villa on the property, which was used by Warren Hastings and his beloved Marion, has also been preserved, and is now the mill assistants' quarters. Of this, later on.

CHAPTER IV

THE BARNAGORE COMPANY AND THE POWER LOOM

In the Mutiny year Mr. George Henderson, senior, of the firm of Messrs. George Henderson and Company, while on a visit to Calcutta, met the Acklands and there was a chance at one time of his firm undertaking the agency of the Rishra concern. But instead, Henderson persuaded the Borneo Company, for whom his Calcutta firm were agents and who then had a huge amount of idle capital on their hands, to invest a few lacs in the erection of a jute mill. The Borneo Jute Company, which was the first of the home registered companies, started work in the beginning of 1859, and to it is due the credit of introducing the power loom for jute cloth.

The ground selected was at Barahanagar (the first Dundee mill overseers did not relish the vernacular, so chewed it down to Barnagore), near the site of an old rum factory, of which there used to be several along both banks of the

river for the supply of liquor to ships' crews and old "John Company's" hardy veterans.

When completed, their first mill—known as the "North"—contained 152 looms 34 in. reed space and forty of 52 in. reed space.

With its up-to-date machinery, the company kept going ahead, and in 1864 erected the "South" Mill which, completed, brought the total looms in the two mills up to 512, of which 120 were of 52 in. reed space.

The late Mr. Thomas Duff—founder of the firm of Messrs. Thomas Duff and Co. Ltd.—piloted the company in the agent's Calcutta office during the first ten years of its existence.

They had some hard snags to get over in the early days. As to how they surmounted one of the first difficulties—the finding of a suitable substance for batching the jute with—mention may appropriately be here recorded of David Waldie, founder of the chemical firm of David Waldie and Co., who established his first chemical works in the early part of last century at Alum Bazaar, an adjacent village. The house he lived in became the residence of the Barnagore South Mill manager when Waldie moved his works to Cossipore. He was asked to advise, and after trials with various oils and fats, a mixture of

poppy seed and cocoanut oil with country tallow was adopted and continued in use for batching purposes over a good many years. He also devised a lubricating mixture to overcome the cause of frequent stoppages of the North Mill through the heating up of the foot bearing of a heavy upright shaft for driving the North Mill spinning frames, which were then placed in an upper flat. His advice was also taken in the matter of dyes for distinguishing stripes in the cloth.

It is not generally known that David Waldie practised research in anæsthetics in his laboratory at Alum bazaar in the direction of chloroform at the same time as Professor Simpson of Edinburgh. The two exchanged correspondence on the subject, and a brother of Waldie's at home meditated a claim for his brother to a share of the credit in the ultimate discovery ; but David was averse to pursue the matter.

EARLY TEXTURES CLASSIFIED

When the company first commenced work, besides the power looms, they had a number of hand frame looms for coarse cotton packing, but in a year or two, as they concentrated on finer twilled sacking and plain D.W. bagging suitable for bags to handle the seed and grain crops, the

hand looms were discarded. The simple range of fabrics so introduced were classified by the Borneo Co. :

“A” Twill Sacking $26\frac{1}{2}$ in. 8 porter 10 shots for standard $2\frac{5}{8}$ lb. 44 in. by $26\frac{1}{2}$ in. grain sacks, blue striped.

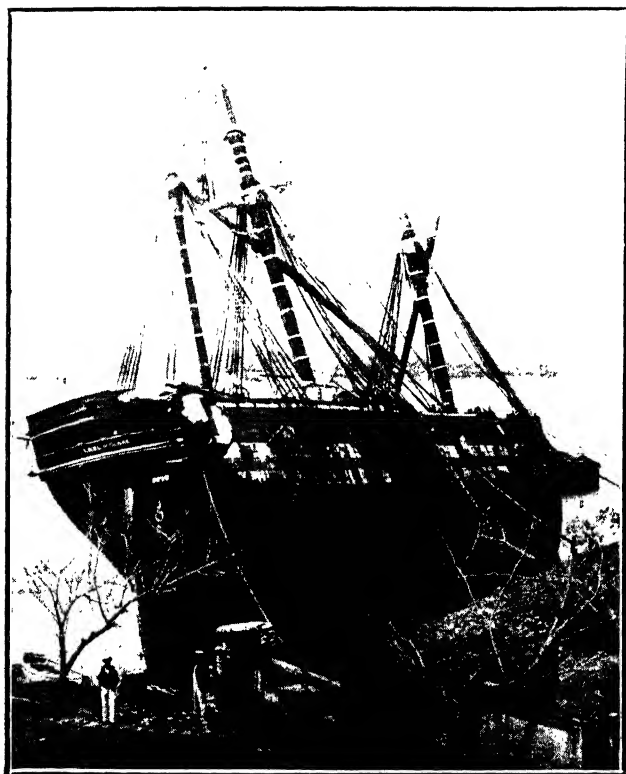
“C” D.W. Bagging 28 in. 8 porter 9 shots for standard $2\frac{1}{4}$ lb. 40 in. by 28 in. Burmah rice bags.

“E” D.W. Bagging 29 in. 5 porter 8 shots for standard $1\frac{3}{4}$ lb. 40 in. by 29 in. unhemmed bags used double for wheat.

Also a D.W. 38 in. Cloth 6 by 8 plain or red striped, used chiefly for bale covers.

Excepting the latter, these textures held the field with limited variations in weights, and sizes of bags, until after 1870, when production, by the advent of new mills, outran the local and neighbouring country demand, and compelled the industry to invade foreign markets with their goods.

Having made good their capital twice over, besides returning good dividends, the Borneo Company in 1872 dropped the name and launched the Barnagore Jute Factory Co. Ltd., with capital of £800 per loom, a high figure at that time.



“ EARL OF CLARE ” ASHORE ON SITE OF PRESENT NORTH
MILL ASSISTANTS’ BUNGALOW

In late years the North and South Mills have both been rebuilt on modern shed lines and another mill called the "East" has been added. For some years the company worked the Bally Jute Mill across the river and the Balliaghatta as branch mills.

THE CYCLONE OF 1864

In the cyclone of 1864 the buildings suffered some damage. And amongst other wreckage from Calcutta stranded on the mill compound, the fine East Indiaman *Earl of Clare* was landed high and dry on the bank where the present North Mill Assistants' bungalow now stands. This vessel was moored at one of the further-down buoys and was the first to break loose and she caused most of the subsequent damage to the shipping in the port.

THE FIRST STEAM LAUNCH ON THE HOOGHLY

The company's launch named the *Barnagore* was caught in the storm off Sulkea and sunk. It was, however, raised soon after and had a similar misfortune again off Bally in a milder cyclone three years later. This launch was the first of the small steam craft seen on the Hooghly. It was a paddle boat built by Gourlay of Dundee, sent out

in sections in 1863, and erected at the mills. It cost £9,000 and was beautifully fitted up with saloon and small promenade deck. The conditions of trade about 1880 made it an expensive luxury and it was sold to Messrs. M. David and Co. of Naraingunge, who had it for a good number of years before selling it to the Nawab of Dacca, who used it as a pleasure yacht.

WELFARE SCHEME

In 1866 the Borneo Company carried out a recreation scheme for behoof of their European assistants and the baboo mill clerks. The building for this purpose, erected on spare ground between Alumbazaar road and the South Mill, contained billiard room, a large hall used in the day time as a children's school, in the evening for social gatherings, and a branch of the Government Savings Bank open for two hours once a week ; also a library and quarters for librarian and keeper. A debating club was formed, open to the outside reading public, with David Waldie, who presented some volumes and valuable microscope to the library, as first president. Excepting the billiards, interest in the other functions of this well-meant plan failed to develop and they had a short career.

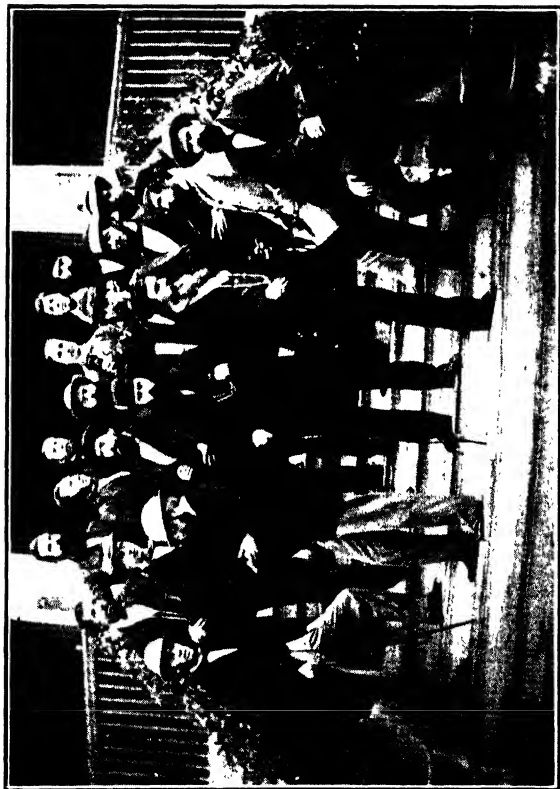
The late Sambhoo Chandra Mookhopadthia, the distinguished journalist, took an interest in the scheme. His quiet home at a neighbouring village was a favourite resort of the well-to-do youths in the district. In the 'seventies he conducted a monthly publication, *Mookergee's Magazine*. His trenchant articles on the political aspirations of the people caught the eye of the Governor-General, Lord Northbrook, and he was made "Resident" or Prime Minister of Hill Tipera, a post he held until his health failed. Some clever skits on the times in Byronic vein, but free from incentive rancour, used to appear in the magazine. Here is a sample :

"Ye Barrons stout of Runnymede,
And ye the ' Bill of Rights ' who won,
Weep bitter tears of grief and woe,
To see your glorious work undone.
Undone ? It cannot ! shall not be !
See ! Furrel thunders through the press,
The gospel news that Britons may
Without offence or sin transgress."

But what has all this to do with our prosaic chronicle ? Just this—an opportunity for one who knew Mookergee to say that India to-day needs in her leaders a revival of the clean patriotic fighting genius of this fine Brahmin gentleman.

THERE WERE GIANTS IN THOSE DAYS

Before proceeding to describe the other companies as they came on the scene, it will be interesting here to glance at the position of the European assistants, the hardy pioneers who nursed the industry and taught the Indians spinning, weaving and the fitting and repairing of machinery. A modern mill of 400 looms employs a staff of eight assistants. The Barnagore Mills in 1862 with 200 power looms and forty hand looms, employed, besides the manager, seventeen assistants. But whereas the modern assistant is more or less of a superintendent, his early compeers had a great deal of the manual work to do as well as to superintend and direct. Among them were tinsmiths, blacksmiths, carpenters and turners and it is not too much to say that the native artisans in the mills to-day owe their skill in a great measure to the training received by their fathers from those early pioneers of the jute trade. Of the Barnagore group of assistants referred to, ten were over 6 ft. in height. They were nearly all men who had been drafted when young from country districts to supply the demand for the jute and flax mills in Dundee and other Forfarshire towns. They had



BARNAGORE MILL STAFF, 1862

Top Row—J. Alexander, W. Bruce, C. Lickfold, J. Watson, J. Grockie.
Second Row—D. Mitchell, A. Brown.
Third Row—Langlands, P. Mathewson, Vannet, Ramsay, Mathers.

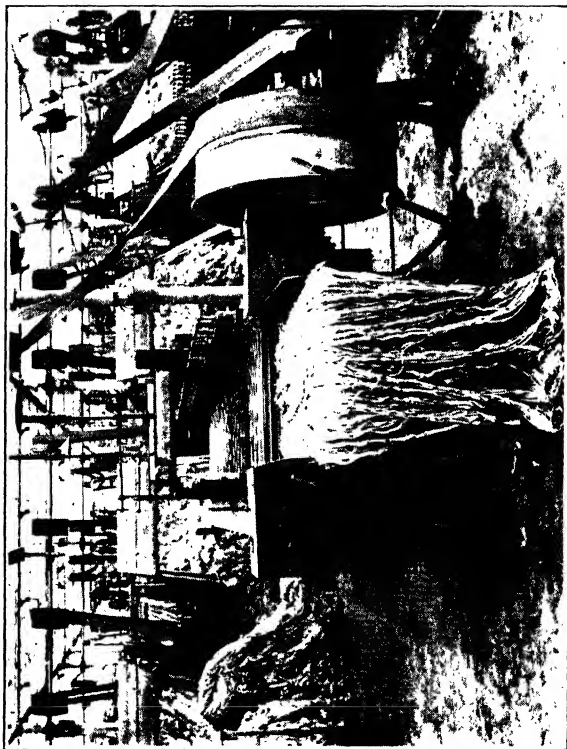
none of the luxuries that the modern assistants enjoy, but could give them points in physique. Whether "brandy panee" had anything to do with it or not, they did enjoy good health. The rupee terms of their engagements were exactly the same as now, only the rupee was then worth two shillings, but there was no bonus paid. It is interesting to note that those Barnagore pioneers are represented by sons or grandsons both in the commercial and mill departments of the industry to-day.

The senior partners of the agents' firm—Messrs. Geo. Henderson and Co.—used to make their residence at Barnagore in a bungalow in the mill compound, and the annual New Year dinner given by them to the assistants was quite an important function. Besides the hosts and mill assistants, numbering latterly about twenty-five, there would be as many as thirty invited guests. At the last of these annual gatherings in 1874, the hosts were W. L. Alexander, D. G. Landale and James Henderson, and among other noteworthy guests present were the late Mr. Robert Steel, J. Horsburgh Hutchison of Messrs. Toulmin and Co., Robert Harvey of the Bank of Bengal, and other leading merchants.

The mill was honoured in 1870 by a visit from

Lord Mayo and a party from Government House, including the Duke of Edinburgh, who went up from Calcutta in the company's launch. Mention of Lord Mayo recalls a remarkable instance of bazaar information in India. One forenoon in February, 1872, a number of native mistries at the India Jute Mills, Serampore, waited on the manager, Mr. Cochrane, to ask him if the bazaar report was true that the Lord Sahib had been murdered? Twenty-four hours later the steamer *Dacca* signalled from Saugor the news of the assassination at Port Blair. It appears that intimation reached Madras the day before, but it is a curious fact that the local bazaars had the news the day before it was made public in Calcutta.

Barnagore had another distinguished visitor in the person of Sir Salar Jung, Prime Minister of the Hyderabad State, in 1874. This distinguished Indian statesman meditated introducing the jute industry into Hyderabad, but he lost power shortly after and nothing ever came of it.



SOFTENING MACHINE

CHAPTER V

NEW MILLS ERECTED 1860-70

About the year 1862 the two doctors' mills were floated, the Gouripore and Serajgunge. The principal promoter of the former was Dr. Barrie, some time connected with Messrs. Scott Thomson and Co., in conjunction with a Mr. Smith of the Sugar Refinery, whose property the Gouripore Co. took over. The founder of the Serajgunge, a home registered company, was a Dr. Macdonnel, who knew something about tea. The buildings of the latter were wrecked in the earthquake of 1897, when the company was wound up and the machinery brought down to Calcutta in 1899 and erected in the Delta Mills.

The Gouripore Company work an up-to-date oil mill in conjunction with their jute business.

Next comes the India Jute Mills, erected on the site of the old paper mill at Serampore in 1866, really promoted by a Mr. Haworth, but with capital provided by the partners of Messrs. Mackinnon, Mackenzie and Co.

The building on the Indian Mill compound, known as the "Friend of India House," was for many years occupied by the Marshman family, and it was here that Havelock met his future wife, Miss Marshman. The house was considerably altered by the Marshmans and there is a local tradition that the original portion was not unknown to Sir Philip Francis and Madam Grand.

FIRST STEP IN FOREIGN EXPORTS

We have now got to five mills with about 950 looms at work. Up to this time there was very little export trade in gunnies beyond Burma. It was not found necessary to be particular about regularity in weights or count of the two or three qualities of bags in use. The buying and selling was beautifully simple, one rupee per inch of length being the rule for price of D. W. cees and $2\frac{1}{2}$ lb. twills. But it now became necessary to seek foreign outlets. The Borneo Company made the first serious attempt about 1868 by shipping 400 bales of their $2\frac{1}{2}$ lb. twills as $2\frac{1}{2}$ lb. 3 bushel twill bags to the United Kingdom. The result was disastrous. The bags averaged on arrival anything from 2 lb. to 3 lb., the shorting varied from 7 to 10 per inch and the result was a claim of a pound per bale.

CHAPTER VI

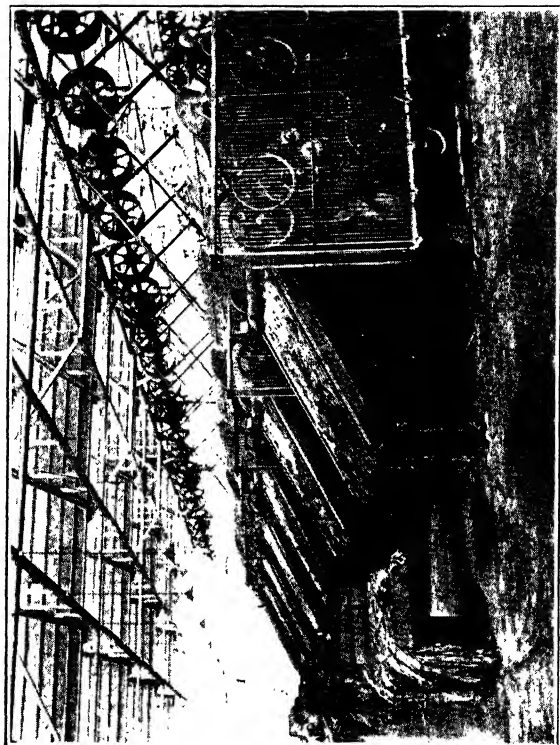
EARLY JUTE PRICES

The average price of common to good jute in those days ran from Rs. 1-12 to Rs. 3 per maund, the chief supply coming from Serajgunge, supplemented with local Dessai. The jute was not so heavily rooted as now, but the mills had not the powerful softeners and improved machinery of to-day and were obliged to cut pretty freely. The cuttings were not utilised, but were thrown away with the ashes on the river bank. About 1866, however, Mr. Weskin, an Armenian gentleman with American connections, who lived in what is now Mullick's Garden House adjoining the Rashmonee temples above Barnagore, persuaded the manager of the Borneo Mills to allow him to have the mill's cuttings for the removal of them. Hand-screwed bales of 300 lb. he shipped to America. The first venture being very successful, he secured other supplies on cheap terms and in a few years cleared enough money to induce him to turn his attention to starting a

small jute mill in the compound of his house. But meantime he lost his capital in speculations, and the buildings, up to beam level, of this abortive attempt to start a jute mill are still to be seen at the back of the garden house where he lived.

RHEA TRIALS AT SAHARANPUR

At an exhibition of agriculture and other implements held at Saharanpur under Government auspices in 1872, a large money prize was offered for a successful mechanical process to decorticate rhea stems. Two of the adjudicators were Mr. Wm. Mair and Mr. D. B. Wallace of the Barnagore Mills. The exhibition of coloured ribbons and other textures made from the treated fibre compared favourably with fine silk fabrics, but too costly to be of any general trade value. Half the prize was divided between two Edinburgh exhibitors for the best machines shown.



BREAKER CARDS

CHAPTER VII

NEW MILLS, 1871-75

From 1868 to 1873 the five mills, excepting the Rishra Mill, simply coined money and brought the total of their looms up to 1,250.

To illustrate the prosperity of the industry at this period we may take the dividends paid by the Barnagore Company. On the working of their first half year a 15 per cent. interim dividend was declared, which seemed to justify the enormous capital at which the company was taken over from the Borneo Company, and shares touched 68 per cent. premium. The dividend for the first year ending August, 1873, was 25 per cent., for 1874 20 per cent., and for 1875 10 per cent. Then came a change.

The investing public had forgotten the disastrous effect of the Port Canning bubble scheme to divert the seaborne trade of the capital to the port on the Mutlah Mouth of the Ganges. Conceived in fear of the Hooghly shoals stranding Calcutta, it died during incubation before half

the projected jetties, sheds and connecting railroads between the two places were completed. The Hooghly pursued its calm career and now floats vessels of dimensions undreamt of when Ferdinand Schiller launched his wild scheme on a gullible public. A railway for country traffic connects the two places. But what was to have been the grand Calcutta rail station edifice is now the Campbell Hospital. The unfinished goods sheds at Sealdah form part of the Union Jute Mill's buildings, and a weird ruin of skeleton iron piles is all that is left of the jetties on the Mutlah. The prosperous condition of the jute industry in 1872-3 seeming to offer a better return than coal or tea, both of which had just had a bit of a boom, it was only necessary to issue a prospectus of a jute mill to have all the shares snapped up in a forenoon.

The Alipore Jail Factory, started in 1870 to make wrapper cloth for opium cases and currency bags, does not count, but in 1872-3 three new companies were floated locally, the Fort Gloster, Budge Budge and Seebpore (now the Fort William), and two Home companies—the Champdany and Samnuggur, all of which commenced operations in 1874. In 1874-5 eight other mills were launched—the Howrah, Oriental (now the

Union), Asiatic (now the Soorah), Clive, Bengal Pressing and Manufacturing Co. (now the Ballia-ghatta), Rustomjee (now the Central), the Ganges, registered at Home and the Hastings Mill, owned by Messrs. Birkmyre Bros., of Gourock fame. Thirteen new companies coming on all of a heap and swelling the total looms from 1,250 up to 3,500, was more than the soundest industry could stand. Looking back, it is surprising that the mills did not suffer more than they did during the subsequent ten years' struggle for markets. Excepting the ill-fated pioneer Rishra Mill, the old companies weathered the stress. But four of the new concerns—the Oriental, Asiatic, Bengal Pressing and Manufacturing Co. and the Rustomjee—became moribund, to reappear again, however, later on under new names and management. The Fort Gloster also suffered badly.

Some facts and incidents in connection with some of these new companies may not be uninteresting. The first in the field was the Fort Gloster—registered in 1872. The leading spirit in the business was a Mr. Richard Macallister, at one time a 'bus conductor in Philadelphia. He came out to the Tudor Ice Company about 1869 and with Yankee instinct decided to have

a hand in the golden pie. The Bowreah Estate, with the old cotton mill on it, which dated back to 1818, but which had been silent for a long time, was then going a-begging. Macallister formed a small syndicate and acquired this fine property. They first utilised the old buildings and machinery to float a cotton mill company and then launched the jute mill. It began work at the end of 1873, paid a 20 per cent. dividend the first year, but for the next twelve years had a very spasmodic career. After being silent for a year or two, when the 100 rupee shares touched Rs. 8, it was restarted about 1888 and has done well ever since. While the Fort Gloster Mill was under construction, Macallister floated the Oriental (now the Union) at Sealdah. A range of godowns, relics of the Port Canning scheme, were utilised in the building of the mill. This company, like the Fort Gloster, had a very chequered existence. Macallister and Co., having resigned the agency in 1878, it was run by Henry S. Cox, of the Camperdown Press, for two years, when it was taken over by Messrs. Bird and Co. and reconstructed in 1880 under its present name.

Macallister was equally unhappy with his next attempt—the Rustomjee Twine and Canvas Factory, now the Central. The idea was to work

a kind of union canvas cloth with country flax warp and jute filling. This was another case of many vicissitudes until it came under the management of Messrs. Andrew Yule and Co. with its present name about 1890.

Macallister was a bit of a mechanical genius in his way and his daring sometimes resulted in curious experiments. To give an instance : when the Fort Gloster Mill first started to make 10 $\frac{3}{4}$ lb. woolpacks, a large percentage of the packs finished very light in weight. To overcome the difficulty the brilliant idea of making up the weight with sand occurred to him. With the assistance of the mill engineer, a mechanical contrivance was rigged up, consisting of a hopper fed with fine sand, which was run into the mouth of the light packs through a small orifice, into which was inserted a jet of steam to make the sand penetrate the cloth. It is not on record as to whether this device was ever put into practice. But other less ingenious devices for various objects in mill processes have been experimented with in days less remote, of which, however, it would be injudicious to say any more.

The Orchard land taken over by Mr. Andrew Yule for the mill at Budge Budge, contained a beautiful villa on the river bank, long known as

"Honeymoon Hall." This villa was a favourite holiday and week-end resort of Chief Justice Sir Barnes Peacock. The house and the still older Bowreah mansion on the opposite side were to the traveller on the journey up the river the first prominent signs of European life and a welcome relief from the dead flatness of the scenery on the lower reaches.

MILLS UNDER NATIVE MANAGEMENT

The Asiatic, now the Soorah, was started by Mr. Charles Smith, already referred to in connection with the Acklands. He conceived the idea of sending out second-hand machinery to start a small mill. After leaving the Acklands' mill he went into business again at home and got into difficulties, but being very popular with the spinners in Dundee, they gave him what he wanted on easy terms. With this second-hand stock, supplemented by a sprinkling of new machinery, all sent out via the Cape, he started the construction of the mill at Narcoldanga, partly using old buildings on the property. Smith, being an old man, did not wait to see the mill start, but took his profit from the firm of Jews who had financed him in the venture and retired.

The Rustomjee and the Soorah claim the distinction of having been worked for a term of years under native management, the former by a Bombay gentleman named Chunder Ramjee, and the latter by a firm of Marwaris.

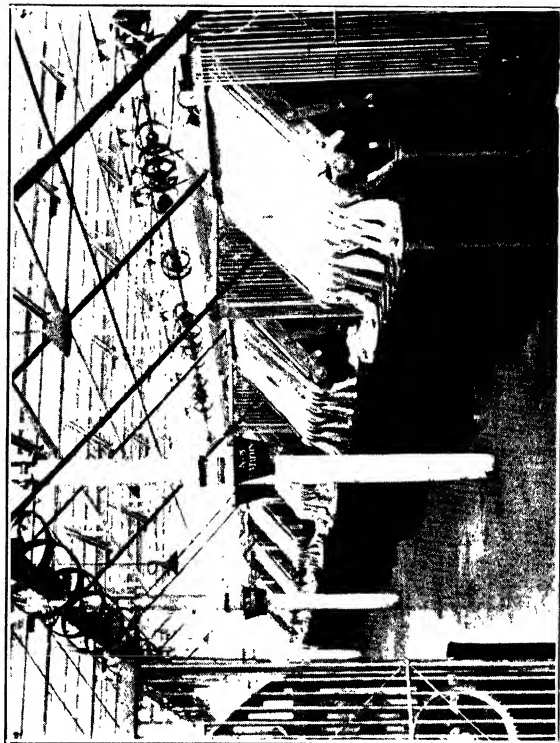
THE BRUNTON PRESSING CO. AND
THE BALLIAGHATTA MILL

A short-lived experiment started in 1875 was the Bengal Pressing and Manufacturing Co.—now the Balliaghatta. The company took over the old Brunton Pressing Co.'s property at Sealdah, which was the second of the hydraulic jute presses, the Naysmiths being the first, but the style of the Brunton press did not prove a success. It was intended to combine jute baling and spinning, but the idea was abandoned and the buildings were rearranged to accommodate machinery for 130 looms by a new company under the present name. It never did any good and was ultimately taken over by the Barangore Jute Company as their branch mill, till it was acquired by the Durbungha family about 1911, under the management of Messrs. James Luke and Sons.

CHAPTER VIII

THE CHAMPDANY AND SAMNUGGUR MILLS

The Champdany, floated at home in 1872, in its initiation owed much to the late Mr. James Luke, senior, who had been a successful manufacturer in Dundee. But in points of efficiency it was left far behind in up-to-dateness by the other home company—the Samnuggur, floated the following year. This latter concern was promoted by Mr. Thos. Duff, who had retired after disposing of the Barking Mills near London, which he erected and successfully worked after leaving the Borneo Company's service. But like the old war horse, he smelt the battle from afar. In conjunction with the brothers Nicol of A. and J. Nicol, and Mr. J. J. Barrie of Dundee, all hard-headed practical men, he floated the Samnuggur Company. They were particularly fortunate in their selection of an expert to conduct their business in the agents' (Messrs. Schoene Kilburn and Co.) office. This gentleman, Mr.



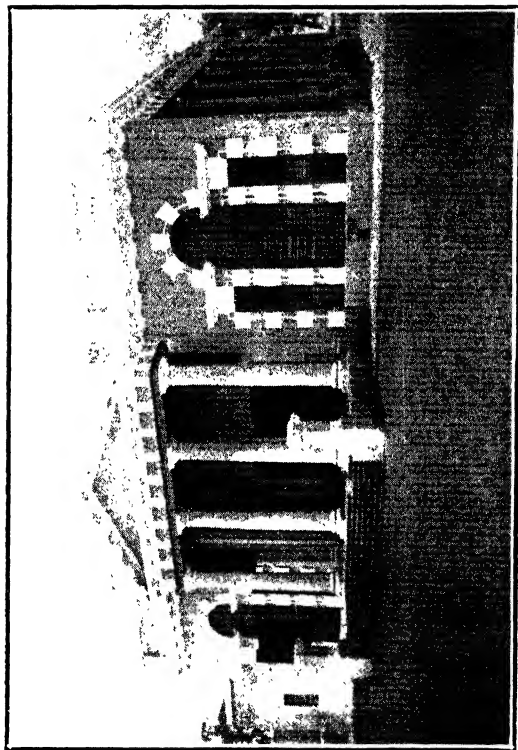
FINISHER CARDS

W. Smith, had forged his way from office boy in Messrs. Cox Brothers, Lochee, to a confidential position with the firm. He was endowed with indomitable assurance and when he came to Calcutta had nothing to learn in the devious ways of jute. Backed by the practical experience and business connections of the home board in foreign markets, this company did more than all the other companies put together to invade new markets. They proved the ability of the Calcutta mills to compete with Dundee for the 'Frisco hessian wheat bag and the Australian cornsack, woolpack and hessian bran bag demand—all carried by sailing craft. It was significant of the superiority of their mill and business methods, that while the other mills languished or went to the wall in the years that followed the enormous additions of new mills in 1873-5, the Samnuggur Company paid a steady dividend of 10 per cent. per annum, besides building up a huge reserve fund, enabling them to present their shareholders with 40 per cent. bonus shares in a baby mill, the Titaghur, floated in 1883, which has grown to rive its father's bonnet. In 1883 the firm of Thos. Duff and Co. Ltd., came into existence and took over the agency.

HASTINGS MILL AND SPECIALITIES

To the Hastings is also due a certain share of individual credit in the opening up of new markets. But their efforts ran more in popularising specialities in stripes and innovations in weights of fabrics for country use. It should, however, be noted that this mill shares the honour with Samnuggur of making the first serious attempts at the manufacture of hessian cloth. Samnuggur paved the way, as already noted, to the 'Frisco wheat pocket trade. But the first important contract in hessian cloth burlaps for the United States was passed by Mr. Montague Massey's firm in 1877 between Messrs. Birkmyre Brothers' Hastings Mills and the American firm, Messrs. Atkinson Tilton and Co., then trading at Calcutta.

Most of the machinery with which the Birkmyres started their mill had been in use in their Gourock factory for some time before it was closed. All the machinery, including used stores, bobbins, etc., came out in a sailing ship. When landed on the mill compound at Rishra, all mixed up, it looked like a huge scrap heap.



WARREN HASTINGS' VILLA (RISHRA)

WARREN HASTINGS' GARDEN VILLA

The ground site of the Hastings Mills at Rishra forms the lower half of the garden property at one time owned by Warren Hastings, and adjoins the land acquired by Ackland for the Pioneer Mill. The bungalow on the Hastings Mill compound known as "Hastings Lodge," did not, however, exist in Hastings time. The actual villa retreat of the great pro-consul in this district, as already remarked, is situated on the adjacent land originally acquired by Ackland, now the Wellington Mill compound. As this was disputed when the first edition came out, interested readers may want to know the source of the writer's information. During a visit to the locality in February, 1873, an intelligent old baboo resident pointed out to the writer the house on the Wellington Mill ground as the one used by Hastings. This was the common belief in the district, and the Bengalee gentleman referred to derived the facts from his own father, who also told him how, when a youth, he, with other village lads, used often to watch the landing of the Hastings party from a houseboat on to a narrow flight of stone steps (not a ghat) to reach the path which led straight up to the

bungalow. These steps were partly exposed at the time of the writer's visit, but covered up some years later when the frontage was reclaimed. The two compounds were one under Hastings' ownership, but "Hastings Lodge" in the lower compound, on which Lord Curzon mistakenly placed a tablet, did not exist in Hastings' time; nor was it ever mentioned as a residence of his until some time after the Hastings Mill owners acquired their part of the ground in 1874, and named the house "Hastings Lodge." Comparison of the architectural character of the two buildings is enough to put "Hastings Lodge" out of court in the matter.

LABOUR AND WORKING HOURS

Up to 1872 the mills worked between 6 a.m. and 6 p.m., with two breaks at 9 to 10 a.m. and 1 to 2 p.m. After that date, by a crude system of relieving squads throughout the day, work came to be started at daylight, continuing till dark, thus adding two working hours to the summer day. Later, when the electric light came into general use, regularised multiple shift systems emerged, allowing the machinery to be worked 15 hours per day.

As new mills appeared the local labour supply

became inadequate, but the situation was relieved by a steady flow of workers from all over Bengal and Orissa, who found the work attractive and suitable to their tastes. This gave a migratory character to a large mass of the labour. Besides being better fed and better clothed, they could save more than enough to visit their homes in relays during the annual sowing and harvest time at their own villages. The companies have done a lot for this important section of their people in the way of clean sanitary housing accommodation and filtered water supply. Mills would be willing to extend this good work but for inimical neighbouring obstructions, for which they are not responsible.

CHAPTER IX

PRODUCTION AND NEW MARKETS

In 1872 the number of spindles to the loom for ordinary sacking and bagging was 6 weft and 10 warp—say 16 per loom. For 45 in. 11 porter hessian warp and weft together 15. It is now nearer 21 and 19 respectively. The shuttle speed of the narrow sacking and bagging looms averaged 120-8 picks per minute and for 45 in. hessian 112. Speeds that would be laughed at to-day.

In the matter of spindle power, the thirteen new mills erected 1872-5 were about on a par with the five old mills. But the new arrivals with latest type machinery and better planned buildings, led chiefly by the first works manager of Samnuggur, James Robertson, junior, a man of great tenacity and push, who afterwards founded the firm of James Robertson and Co. Ltd., Spinners, Dundee, soon created a revelation in the art of spinning and weaving, leaving the older concerns far behind in output per loom.

By and by a spontaneous spirit of healthy rivalry took charge of all the works managers and overseers, which infected the working people as well, mostly Bengalese then. Without increasing the number of spindles, which came about later, the mill machinery was gradually speeded up and the loom picking increased to the limit of working safety.

Under this initiative on the part of the mill staffs at the various mills, between whom there was no secrecy regarding the doings at their respective works, and being left a free hand by the managing agents, production bounded up and manufacturing costs decreased by over 30 rupees per ton. Thus ably supported at the works, the managing agents, by carefully directing the flexible tentacles of limited liability control, succeeded in penetrating fresh markets to absorb the enormous increase of output and so tide the mills over a very critical period, although a few did suffer temporary collapse.

Once they got an opening into the Australian and New Zealand markets for cornsacks, wool-packs and hessian bran bags, the mill agents, without any organised combine, nursed this outlet by turning out and stocking bigger and bigger quantities of the goods in anticipation of the

seasonal orders. Through the agency of Messrs. Mackinnon, Mackenzie and Co., with their colonial correspondents, Messrs. Montefiore Joseph and Co. and others, whole cargoes came to be booked. Later, Messrs. Mackinnon, Mackenzie and Co. handed over the shipping of the cargoes to Messrs. Anderson, Wright and Co., who were large buyers of sacks, etc., for export to the colonies, and this firm held a partial monopoly of the freight and shipment for some years.

The 'Frisco cental hessian wheat pocket demand was fostered in like manner. Messrs. Schoene Kilburn and Co., through their 'Frisco principals, engineered the freight and shipments. The method of dealing with the mills was to send round quite openly a list inviting the mills to state how many bales each was prepared to offer for delivery by certain fixed dates, price to be settled when the required quantity was declared. Such is the story of how these important Dundee preserves came to be annexed by the Calcutta mills, between 1875-85.

CHAPTER X

NEW MILLS, 1875-85

Between 1875 and 1882, there is only one new mill to record. The Kamarhatty, promoted by Messrs. Jardine, Skinner and Co., came into being in 1876 as the result of Dr. Barry's visit to Calcutta in 1876, when he transferred the agency of the Gourepore Co. from Messrs. Jardine, Skinner and Co. to his own firm. This mill, together with additions made by some of the other mills, brought the total looms up to 5,150 in 1882. By the end of 1885 the total was further augmented by the Hooghly, Titaghur, Victoria and Kanknarrah Mills, bringing the total looms up to 6,700.

A LAND DISPUTE

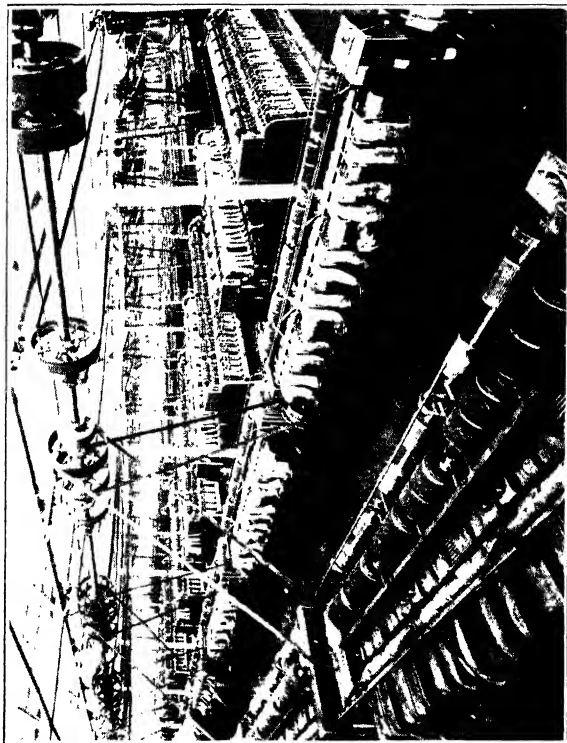
Mention of the Victoria recalls the celebrated land dispute which lasted for about two years between this company and the Samnuggur. In those days it was considered by the mills a matter of life and death to prevent a rival

the old rooms of the Chamber of Commerce, the Association was duly baptized and held its first formal meeting on November 10th, 1884, under the chairmanship of Mr. J. J. J. Keswick. Despite the want of harmony occasionally, when knotty points crop up, the Association has been a factor for good to the trade. For the first year after the inauguration of the Association, the mills met weekly to fix prices of certain fabrics.

NEW MARKETS OPENED UP, 1885

By this time, 1885, the mills had made fair progress in foreign markets. Assisted by a stricter attention to quality, they were now getting regular orders for $2\frac{1}{2}$ lb. twills, flour bags and salts for the United Kingdom. The firm of Messrs. Walter H. Hindley and Co., of London, ably supported by their Calcutta agent, Mr. A. B. Shekelton, was one of the first to recognise the virtues of Calcutta-made goods.

The Egyptian Daira contract had been placed in Calcutta for two or three years in succession, and Levant orders for grain sacks and other twill goods were steadily growing in quantity. The whole of the colonial cornsack supply had been virtually annexed and a handsome share of the woolpack orders as well.



DRAWING AND ROVING FRAMES

The hessian side of the mills output was still, however, a slow feature in the trade. Wheat pockets, Australian bran bags and Egyptian cotton packs were the principal outlets. These, as already remarked, were often made in anticipation of their respective season demands, and it was no uncommon thing for a mill to prepare a stock in advance of wheat pockets amounting to 2,000 bales or more. Shipments of burlaps and 90 by 40 cotton packs to the United States were small and the latter disappeared after a few years when the tariff on finished bags was imposed to protect the new sewing shed industries in the States.

SHORT TIME AND MINIMUM SELLING RATES

But notwithstanding the opening up of new markets, the working results of the mills generally continued to be disappointing. The demand was not sufficient to meet the production and under an elaborate voluntary indenture, with Mr. S. E. J. Clarke, Secretary to the Chamber of Commerce, as Trustee, the Associated Mills agreed, with the exception of the Hooghly and Serajgunge, to work short time. The first agreement for six months dating from February 15th, 1886, was subsequently renewed at intervals

without a break for five years up to February 15th, 1891. The state of the markets at the time of the renewals, dictated the extent of the short time, which varied throughout the five years between four days a week, nine days a fortnight and five days a week. Besides short time, 10 per cent. of the sacking looms were shut down for a short period in 1890. An important feature of this agreement was an undertaking by the parties not to increase their spinning power during the currency of the agreement, only a few exceptions being made in the case of incomplete new mills.

In 1890, with a view to further improve the situation the associated mills entered into a compact to fix a scale of minimum selling rates for fabrics used in the country trade, rates for markets west of Suez to be left open. This artificial attempt to improve the mill sale sheets lasted for about eighteen months and had a destructive effect on mutual confidence among mills. All sorts of ruses to get round the minimum scale were adopted and recrimination became the order of the day. Certain of the more favoured mills encouraged a system of double-barrelled business, by which they were able to dispose of country goods at the fixed rates in consideration of selling a quantity of foreign

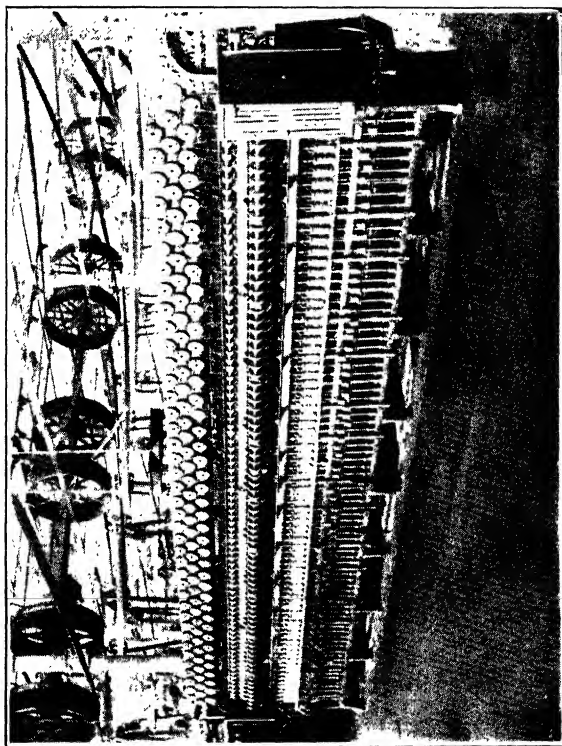
goods at buyers' prices. This combined with other wily business dodges, eventually burst the compact. The brokers meantime did not escape a share of the blame for carrying out these evasions of the solemn compact and in 1892 the associated mills reduced the rate of brokerage from 1 per cent. to $\frac{1}{2}$ per cent. This, however, on a representation by the brokers, headed by their energetic leader, Mr. Edward Delius, was modified within six months and the rate fixed at $\frac{3}{4}$ per cent., the present rate—in consideration of future good behaviour on the part of the brokers. One result of this quarrel was the formation of the Gunny Fabric Brokers' Association.

CHAPTER XI

HESSIAN AND SACKING PROGRESS, 1885-95

During the succeeding ten years ending 1894 there were no new mills to chronicle, with the exception of the Calcutta Twist Mill with 2,460 spindles, since merged into the Wellington branch of the Champdany Company. Latterly the existing companies gradually increased their looms and improved their holds on foreign markets in sacking goods. But the principal feature was a marked advance in the output of hessians. The United States cloth consumers, having got over their first prejudice against Calcutta manufactures, were the principal supporters of this advance.

An important outlet for sacking goods, which has since assumed large dimensions, began in 1889, when Messrs. P. Marsh and Sons, through their newly established Calcutta house, took up fair quantities of 40 by 28 Es for the West Coast ports of South America. This was the beginning of the cargoes of 36 by 25 nitrate bags which are now a regular feature in our markets.



SPINNING FRAME

DUNDEE RIVALRY, 1894

In 1892 an unprecedented rise in the price of jute had a very depressing effect on the industry. Four mills were entirely stopped for short periods and nearly all the others worked short time. 1893 was also a poor year. But the jute crop of 1894 turned out a full one and, with bumper food and seed crops all over the world, a general improvement in the mill industry set in.

It was in this year—1894—that two of the mill managers on the Surrey side conceived the idea of forcing their spinning output in the daytime, so as to work the looms for an extra hour or two with the aid of small oil lamps or candles. This simple method of forcing production led to the introduction of the electric light and the present working day of 15 hours.

The tendency of the later additions effected by the mills to increase their output was directed towards a larger proportion of hessians. Of the total of 6,700 looms working in 1885 only 1,800 were for hessian. By the end of 1895 there were 3,117 hessian looms out of a total of 9,701. The principal outlet for this increased output of hessian was the United States, and Dundee manufacturers now began to look seriously on

the sustained invasion of what they considered one of their chief preserves. No doubt they were feeling the pinch, but this did not justify the hysterical utterances and assertions of slavery and so on thrown at the working of the Calcutta mills by members of the Dundee Chamber of Commerce, who ought to have known better.

It so happened just then that the Hastings Mills, with the object of conserving their labour supply from encroaching new mills, decided to run their machinery 22 hours daily by systems of separate day and night shifts permissible under the Factory Act. The nominal working day of adult day shifts being not more than 10 hours, with frequent relief intervals, and the night shifts under 10 hours. Children 7 hour days, with intervals, no children on night shifts. It may be noted here that this innovation lived only four or five years.

On December 26th, 1894, the Dundee Chamber unanimously passed three resolutions, which were put before the Secretary of State for India through the senior M.P. for the city, Sir John Leng. Summed up, the resolutions alleged :

“Injustice to home industry through laxity of Indian Factory Act allowing women and young persons to be wrought 22 hours and children 15 as against 10 at home.

“Lack of adequate trained inspectors and inability, even if special officials were set apart for the work, to prevent work of women and children being exceeded under the shift system.”

And questioned :

“Whether evils incident to employment of women and young persons for long hours had been considered in permitting under shift systems a new (Indian) industry to develop itself.

“On these grounds, the Chamber submitted that subjects of the Crown and under one Parliament, whether in India or at home, should be on similar conditions, etc.”

The resolutions were duly submitted and the Indian Secretary ordered an inquiry to be made on the spot.

Here it may be remarked there may have been qualms in the minds of some of the members of the Dundee Chamber. Quoting from the Indian Jute Mills Association's reply called for by the Indian authorities :

“The Senior M.P. for Dundee was present at the meeting and spoke as a member of the Dundee Chamber when the resolutions were passed. A few weeks later in the House of Commons he attributed the alleged injustices to the great depreciation of the Indian standard of value in terms of gold.”

The bi-metallic controversy was then in full swing.

While the Government inquiry was proceeding, Sir John, with characteristic thoroughness, decided to visit India and examine the situation for himself. He made very full investigation, visiting most of the mills then working.

The following extracts are typical of what he published on his return.

The Hastings episode :

“First impressions seemed to imply excessive hours. Examination, however, showed : Day squad A worked 9 hours, B squad $8\frac{1}{2}$, and C 9. Of the D night squad, one section worked 8 hours and the other 6½. Children, day only, 7 hours.”

Workers and the shifts generally :

“Consequent on the heat, their weaker constitutions and their love of bathing, they prefer working in what may be called alternating shifts, so that they might work at two different periods of the day with pretty long intervals between.”

Low scale of wages and cost of living :

“The cheapness and simplicity of their garments, food, and nominal house rent, account for their being able to live on small wages. Most incredible of all, the wages they receive are considerably in excess of their requirements and they can, if they choose, most of them do, save as much in some months to enable them to go home and live at ease for a considerable time until they have spent their money, and return

to work for more. I made inquiries everywhere I went, getting the same testimony. The hands in these mills are amongst the best paid native workers in India. The silver ornaments worn by the women and girls show that they consider themselves amongst the aristocracy of labour."

Health and physique of the workers :

"Although they do not eat meat, and live largely on rice, their ribs are well covered and, without being fat, they have abundance of flesh.

"Properly qualified medical attendants are kept, and the latrines generally, which must be at certain distances from the sheds, are far superior to those at similar factories in England or Scotland. Filtered water is amply provided from pipes placed at various points on the mill compounds."

Much more might be quoted from his informative little book, but the above is sufficient to put the Dundee Chamber's complaint in its true perspective.

It only remains to add that Sir John gave credit to the Factory Inspectors for efficiently carrying out their duties, and the willingness of the mill managers to carry out the Inspector's suggestions.

In generous terms he recorded how much the mills had done for the comfort and welfare of the workers within the mill compounds, which

vary in area from 10 to 45 acres each, as well as outside in conjunction with local municipal bodies and others, though occasionally they do not see eye to eye with the companies. Further, he had the courage to point out that curtailment of the working day would only hasten the creation of more mills to keep up competition.

What he thus wrote then would be even more pat to-day.

The Indian authorities made exhaustive inquiries through their officials and other sources, and laid the Dundee resolutions before the Indian Jute Mills Association, the Bengal Chamber of Commerce and the Bengal National Chamber of Commerce composed of native Indian merchants, inviting replies.

It would be tedious to go over the whole text, which will be found fully recorded in the Annual Report of the Indian Jute Mills Association for 1895.

In brief the replies, as far as the jute industry was concerned, proved the beneficial results of leaving the companies to work by shift systems, approved by Inspectors, within the compass of the Factory Act, to meet the habits and needs of the people, in keeping with the conditions prevailing at the separate mills. To enforce rigid

periods of individual work such as at home would entail less freedom, stricter supervision and hardship on the workers, if not discontent as well, and would only affect production just so long as it took to build new factories.

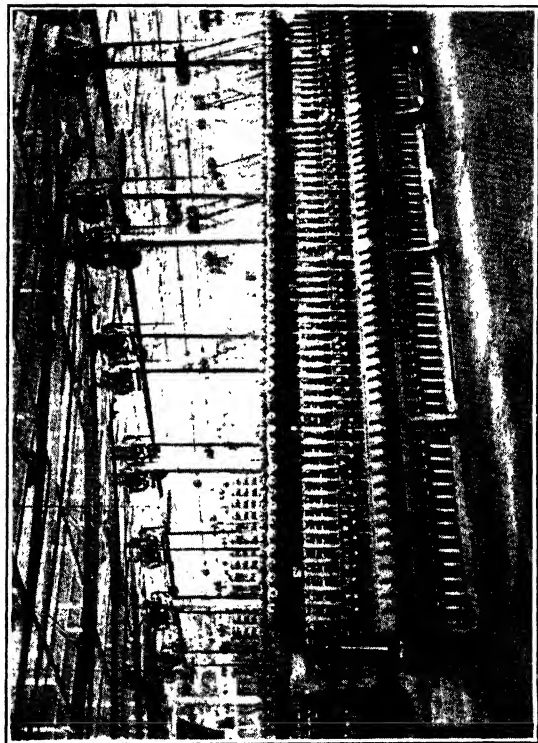
So the matter was dropped. But that is not to say the conditions left no room for properly applied amendments in the Factory Act. Ten or fifteen years later a Labour Commission toured the country, followed by a Factory Commission, and amendments were enacted involving, as far as the jute industry was concerned, minor modifications in the employment of women and children.

The truth of the matter is, that, without inflicting unnecessary suffering, you may not trifle with the ways and customs of subtropical people by arbitrarily imposing rules and regulations which are repugnant to them, however necessary these may seem in countries like our own.

AN ENGINE'S DISASTER

About this time some of the mills, with a view to economy, introduced triple expansion main engines of the marine type. The Ganges Company thought to gain the object with the ordinary side by side twin cylinder engines by adopting a

comparatively small diameter of cylinder for a high initial steam pressure and an abnormally large piston area for the reduced pressure. This engine had not been working for long when something went wrong. The first motion spinning shaft pulley, rope geared off the engine, was wrenched off its seat fixed high up against the engine house wall, the spinning frames being in an upper flat. Whether this caused the engine to race, or if it first ran away, causing the driving ropes to overlap and create a tension which overcame the resistance of the supporting pulley bracket, is doubtful. At any rate, the engine attained such a terrific speed that the main drum, 30 ft. in diameter and 12 ft. rim width, exploded, sending the metal fragments through the lofty roof of the engine house 100 ft. into the air and scattering them all over the compound. Fortunately no lives were lost in this miniature Krakatoa.



WEFT-COP MACHINES

CHAPTER XII

FIXED AND MINIMUM SELLING PRICES, 1901

Having lost sight of the crooked result of the minimum selling rates agreement of 1890-2, the mills, during a temporary depression of markets, in 1900 again adopted a fixed scale of minimum rates. Just as on the previous occasion referred to, mills vied with each other in artful ways of evading the fixed rates. Modified at intervals, the last revision of this agreement was fixed up to December, 1901, but it came to a sudden death in October, when one of the consenting mills to the agreement intimated to the Committee of the Association that the state of their stocks of certain fabrics would necessitate their accepting the best prices obtainable, irrespective of the fixed rates. This burst up the agreement. The Committee were blamed and had to bear the odium of an impossible legacy imparted to them from the preceding Committee, under the seal of good faith on the part of the signatory mills to the agreement.

A tacit agreement, fixing the prices of wheat pockets and cotton packs from time to time, was arrived at in 1895 and, save for slight hitches, worked satisfactorily for three years.

Whatever may be said in favour of holding for prices in the case of a monopoly or items of known demand, such as the tacit agreement about wheat pockets referred to—and even it stirred up some dirty liquid—it is much to be hoped for their own sakes that mills will never venture again on a hopeless course, but as necessity arises, restrict their production in keeping with the demand. What matters it if there should be a dissentient or two? When two stood out it did not deter the others in the five years of short time from 1886 to 1891.

SHORT TIME, PLAGUE AND LEGISLATION

An abortive attempt to fix short time for six months began on April 1st, 1899. It lasted two months.

The mills in the neighbourhood and south of Calcutta suffered very severely in 1898-9 from the exodus of labour which took place in consequence of the ill-advised regulations issued by Government at the outbreak of the plague. In some cases over 25 per cent. of the machinery

was put out of action for want of hands, and profits touched vanishing point.

Owing to the unprecedented high rates for jute and to help maintain the rates of manufactured goods, the mills agreed to curtail production by stopping the electric light and worked from daylight to dark for six months from January 1st, 1906.

In 1906 the prospect of legislation to restrict working hours in mills gave an impetus to large extensions at some of the mills. These extensions, together with the later new mills, augmented production to such an extent that the mills found it expedient to work five days a week. This rate of working commenced from March 15th, 1908, and continued up to the end of September, 1909.

ENORMOUS STRIDES, 1895-1909

We have seen how the twenty-one companies at work in 1885 increased their looms from 6,700 to 9,701 at the end of 1895. But this increase is eclipsed by the enormous strides made since the latter year up to the jubilee year of the jute power loom in India, 1909.

Between 1896 and 1900 the following new mills started work : The Gordon Twist Mill, with

1,800 spindles, worked later as the Fort Gloster branch mill till taken over by the Anglo-Indian Company, Khardah, Gondolpara (French owned) Alliance, Arrathoon, Anglo-India, Standard, National, Delta (which absorbed the Serajunge) and the Kinnison. A lull of four years witnessed large extensions to the existing mills. After which came the following series of new mills, besides further heavy extensions : The Dalhousie, Alexandria Naihati, Lawrence, Reliance, Belvedere, Auckland, Kelvin and the Northbrook.

This brings us to 1909—38 companies with a loom total of 30,685, of which 17,735 are for hessians, and a total of 677,070 spinning spindles employing all told 184,110 Indian hands and about 450 European assistants, a total representing the entire population of Dundee, as against a total of 9,701 looms and 203,522 spindles employing 57,000 hands and 180 Europeans in 1895.

ARGENTINE CLOTH AND CUBAN SUGAR BAGS

The most noteworthy of the new markets which have contributed to keep this enormous increase of spindles going are, first, the South American hessian cloth orders—the first purchases of which in any quantities were made by

James Gow and Co. in 1896—and secondly, the Cuban sugar bag orders, which appeared about the same time. These two outlets have increased enormously. So also have all the other export markets previously tapped.

With one or two exceptions, all the mills have averaged good profits since 1895, and that practically without having recourse to short time until March last year, when it was agreed to work five days a week, which was continued up to the end of September, 1909.

Here endeth the first edition revised at which stage the principal topic on the market was the contemplated New Factory Bill for all India.

CHAPTER XIII

1910

OVER PRODUCTION AND PROPOSED "COMBINE"

1910 opened with a fair barometer, despite the enormous increase of looms from 10,000 to 31,000 in the preceding fifteen years, but most of the new entrants had now got into full stride and production began to overlap demand. Every possible corner of the earth had been tapped, yet stocks accumulated. Through absence of unanimity, resort to short time was postponed till April, when an agreement to work a five-day week was fixed up. Commencing from September 1st, 1910, it was continued, with variations, up to June, 1912.

The situation was aggravated by a freak disparity between the figures in the preliminary and the final official forecasts of the 1910-11 jute crop. The first estimate, issued in July, 1910, gave 64 lacs of bales, 31 per cent. below the actual crop marketed the previous year, as ascertained at close of that season. This naturally

committed the mills to heavy forward buying at high prices, and though the final forecast put the crop at 86 lacs bales, prices had gripped and soared to an abnormally high level without any compensating movement in rates for manufactured goods. Many of the mills were hard put to make ends meet in 1911 and by the end of the year some members conceived the idea of a permanent combine for regulating supply with demand to ease the position and avert future crisis. A select committee of the Mills Association, in consultation with an American gentleman well grounded in organised industrial combines, drew up an elaborate scheme, which appealed to certain of the members. Perhaps it was well for all branches of the jute trade that, while the scheme was being pondered, markets for goods showed signs of new life. At any rate, the draft scheme was filed for reference to some unknown time.

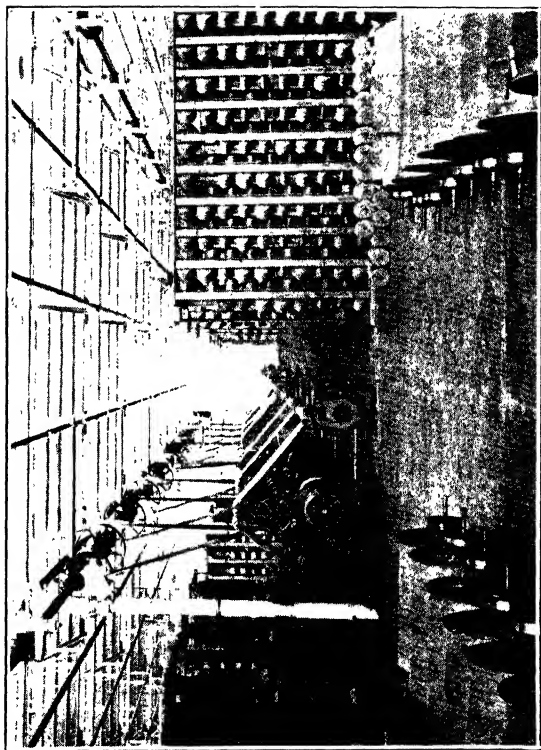
FACTORY ACT, 1911

The new Factory Bill for all India was enacted in March, 1911, but did not come into force till July 1st, 1912. Its provisions were generally welcomed by the jute industry, which was prepared to adopt it when passed. The delay seems

to have been intended to give the Bombay Parsee-managed cotton mills time to adjust certain real abuses in the working hours of children apparently carried on in their factories. The Act vetoed the employment of women and children by shifts before 5.30 a.m. and after 7 p.m., which reduced the working of machinery per day under the shift system of hands to $13\frac{1}{2}$ hours. This did not materially affect the individual time wrought daily, which averaged about nine hours for adults and six hours for children. A few of the mills elected to work a single shift of adults, including a relieving squad to minimise the actual individual time wrought, with a break of two hours in the heat of the day, and two separate squads of children.

SCHOOLS FOR CHILDREN

By arrangement with the Provincial Government in 1914, schools were erected in selected mill areas for the workers' children, special attention being paid to ages between 5 and 9 years, and facilities for older children, who were encouraged to attend. But judging from results of earlier mill experiments, success will remain doubtful until the time becomes ripe to introduce compulsion.



BEAMING MACHINES

NEW MILLS, 1910-14

Three new mills came into operation between 1910 and 1914—the Albion, Empire and Angus. The latter, American-owned, though promoted principally by the late Mr. George Spence, a former manager of the Duff group of mills, is, like the Northbrook Mill, built on the landward side of the Grand Trunk road, having, on the other side, the village of Ghirety (or Gourhaty), an appanage of French Chandernagore, between them and the river. The village covers a narrow strip of land not much over a hundred yards wide in parts and about a mile in length. The mills pay toll to the French Government for right of way and jetty traffic to and from the river. The Angus manager's residence is on what was the garden of the Chandernagore Governor's palace in Dupleix's time. When the jungle-clad ruins of the palace were recently rased, the ground was carefully excavated, but no relics were unearthed of Bob Clive's great antagonist.

The company maintains a fully equipped hospital and nursery for their workpeople, with a resident European surgeon and staff of native assistants.

Every mill on the river has its own foundry

and workshop for all manner of repairs, but the Angus work a complete up-to-date machinery plant for turning out new machines, not confined to their own wants. During the War it had a busy time.

Adjacent to the Angus Mill buildings there is to be seen the ruins of an old indigo factory, if not the only, the best preserved of what is left of the few of these old concerns that used to exist in the surrounding districts.

These three mills, plus the extensions of 6,000 looms at the other mills, brought the total looms up to 38,354, including 22,603 for hessian cloth, at the end of 1914.

CHAPTER XIV

THE GREAT WAR

In the middle of 1914 the majority of the mills were on short time and markets showed signs of improvement, when the War cloud burst, and it seemed but reasonable to extend the short time agreement, which would expire in September. Steps were in progress to this end when a bolt from the brine in the shape of the *Emden* cruiser, by the rapidity of its incursions into the Bay of Bengal, paralysed the shipping, emphasising, or so it seemed, the dire necessity of reducing steam, if not of shutting down the mills altogether. However, as it happened, full time was resumed before the enemy raider was earthed at the Coco Islands in September.

All the mills worked whole-heartedly with Government in its demand for sand bags, wrapper cloth and a heterogeneous mixture of nondescript fabrics, some quite new and requiring special manufacture.

The first contract for delivery over six months

was at £15 per ton less than paid to Dundee sellers for exactly the same goods, making a difference, after due allowance for homeward freight and charges, of three-quarters of a million pounds on the six months' deliveries.

It would be wearisome to detail the incidents of the industry throughout the War. Certain rules under the Factory Act were scrapped and work went on at high pressure. The parent of invention taught how to eke out the life of imported mill stores, furnishings, etc., as well as how to adapt native substitutes for these. Drafts for the Army reduced the staffs of mechanics and foremen, also mill clerks and office salesmen.

The exchange value of the rupee soared until it ultimately crossed the old East India Company par. of 10 to the £, thus adding considerably to the sterling c.i.f. cost of the mills exports for commerce, but the world required the bags and cloth at any price.

Huge working profits ensued, bonuses were lavishly spread over the staffs and workers, the latter receiving permanent rises in wages covering the extra cost of living.

A rift in the melody, which proved temporary, occurred when, in February, 1917, Government

suddenly notified suspension of sand bags and cloth supplies till May. Mills had been compelled to hold heavy stocks of cloth and bags in reserve against the contingency of Government specifications, with the result that immense quantities of stuff had to be thrown on the market to relieve the glut, and obliged the mills to work a five-day week April to March, 1918. Then unexpectedly the Home Government contractors notified declarations for prompt shipments of fabrics to the Argentine and work resumed full speed again.

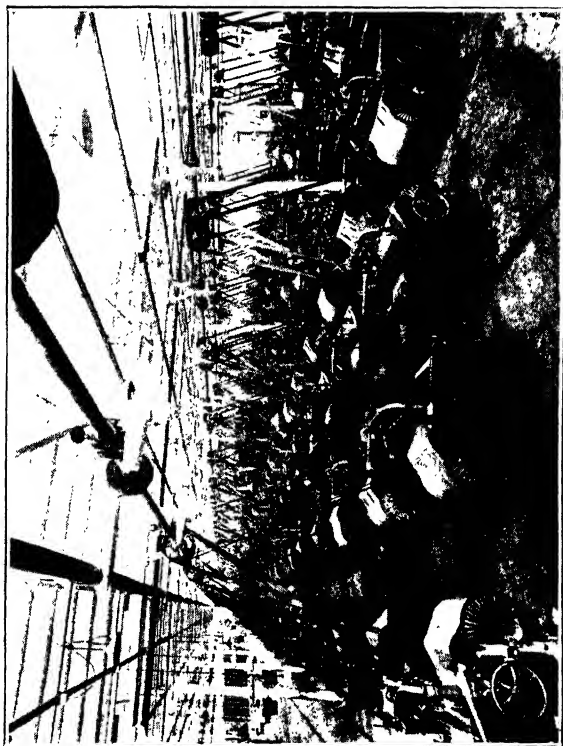
Altogether the combined mills supplied a total of 1,378 million sand bags, 713 million yards of cloth, and 1,000,000 lb. of twine, besides large quantities of wrappers and bags for war purposes in Mesopotamia and throughout the country.

Such, in brief, was the important part played by the Indian jute mills to help our glorious Empire in the great conflict, besides providing the major part of the jute packing for distributing the world's necessities.

MILLS FLOATED DURING THE WAR

Six new Companies were formed during the war. The Bally, Caledonia, Lothian, Orient, Waverly and Craig. But only five should count as new. The Bally, which was adapted out of

the buildings of the old paper mill on the banks of the Bally Canal, had been run some years as a branch of the Barnagore Company but was launched on its own after the Company built its East Mill. Of the other five, excepting the Caledonia, none of them came into the field until after the war. Only some 2,000 looms were added to the working total during the war.



WEAVING

CHAPTER XV

AFTER THE WAR

The industry was faced with a crisis when war orders ceased, though the immediate position was eased in so far that Government took over all existing stocks made on war account. In the chaos that ensued, production was far in excess of the world's dislocated trade wants. Prices of all goods dropped, and two short crops, 1917 and 1918 hardened the value of jute. By curtailing output from time to time the mills managed to tide over the first two critical post-war years.

SHORT TIME AGREEMENT

In December, 1921, agreement was arrived at to work 54 hours a week for an indefinite time, but terminable on two months notice by any one of the signatories. It was left optional to work either four days of 13½ hours by double shifts, or four days of 11 hours and one of 10 hours by single shift of adults and two of youngsters with

a mid-day break of two hours. Three years later, all extensions, whether in the shape of new mills, save those already floated, or additions to existing concerns, were vetoed during the currency of the pact.

This time-agreement has now been running for over six years and is still in force, though at one stage the course touched troubled waters when wholesale accusations of devious infringements in working time were alleged against mill managers and nearly wrecked the flow. Fortunately delicate handling, combined with some sturdy speaking, filtered the awkward ruffle.

MILLS FLOATED SINCE THE ARMISTICE

Since the Armistice nine more Companies have been floated. The Cheviot, Birla, Hukumchand, Ludlow, the American Manufacturing Company, Presidency, Nudea, Megna and Bansberia.

The Cheviot plant consists of second-hand machinery taken over from Thomson Brothers' Angus Works, Dundee. The packing and shipping of the machinery caused considerable surprise and resentment among the unemployed in Dundee. The Birla and Hukumchand are the only ones now under native management. But

there will soon be another which is now being erected by a Marwari firm, Surajmull Nagurmull, jute balers, on the Howrah side at Sulkea. The nucleus of the plant in this mill which is planned for 200 looms consists of machinery taken over from the abandoned Government Alipore Jail mill. The Ludlow and American Manufacturing Company with the Angus are American owned and managed. Bansberia is situated close to what used to be the headquarters of the Commissioner of Thuggee and Dacoity.

These mills with those promoted during the war bring the total looms up to 50,354, including 31,001 Hessian, as at 1st January, 1927, keeping a total of 1,058,100 spinning spindles going.

The Narcoldanga Mill with its fourteen looms now included in the list was originally started by a Mr. Briggs to make a kind of felt blanket cloth for coolies out of jute waste and other cast-off fibre stuff.

The Calcutta Mills now take up a stretch of over sixty miles of the Hooghly. Bansberia the furthest up on the right or Howrah bank being about thirty-five miles above Calcutta and Birla on the left bank about twenty-five miles below at Shamgunge hat.

OTHER INDIAN MILLS

The Nellimarla at Madras a new mill planned for 500 looms under Messrs. Binny and Company's management which may be a forerunner. Also, in the Madras Presidency the Chitavalsah, the Krishna Jute and Cotton Mills, and the Guntur Mills with not more than 100 looms each under native management. And the Rameshwar Mills at Makterpur in Behar which are owned by the Durbangha Raj and managed by Messrs. Jas. Luke and Sons. It has 115 looms running and space for about 350.

CHAPTER XVI

COMPARATIVE FOREIGN EXPORTS AND INDIAN CONSUMPTION OF BAGS AND CLOTH

The following is a summary of the Calcutta gross average annual exports of manufactured bags and cloth for the three years 1924-6 to the various destinations, together with local Calcutta consumption and railed deliveries to up-country centres, showing the relative Indian and foreign demand :

| Destination | Bags or Packs Twill, D.W. and Hessian | Cloth in yards. Twill, D.W. and Hessian |
|------------------------------|---|---|
| <i>Foreign Exports.</i> | | |
| U.K. | 41,841,935 | 58,913,950 |
| Continent | 16,592,248 | 7,935,083 |
| Egypt and Levant | 19,326,623 | 6,936,566 |
| Cape Colonies | 24,069,098 | 4,288,280 |
| Mauritius | 8,303,966 | 746,010 |
| China | 26,009,833 | 15,012,500 |
| Japan | 19,360,304 | 886,400 |
| Straits and Java | 55,208,413 | 8,230,190 |
| Australia and N.Z. | 85,700,161 | 31,694,116 |
| America, N. | 37,881,949 | 1,051,953,695 |
| America, S. | 50,012,191 | 261,438,744 |
| West Indies | 43,067,025 | 334,666 |
| Foreign Total | 427,373,746 | 1,448,370,200 |

| Destination | Bags or Packs Twill, D.W. and Hessian | Cloth in yards. Twill, D.W. and Hessian |
|--|---|---|
| <i>Country Ports.</i> | | |
| Burmah | 44,138,855 | 1,173,903 |
| Bombay and Karachi | 16,769,905 | 21,924,183 |
| Madras | 5,981,442 | 1,684,450 |
| Ceylon | 2,138,366 | 3,163,733 |
| Country Total | 69,028,568 | 27,946,269 |
| Total Exports | 496,402,314 | 1,476,316,469 |
| Local consumption and railed deliveries to Up - Country Stations | 85,277,071 | 51,170,008 |
| GRAND TOTAL | 581,679,385 | 1,527,486,477 |
| Combined Country Ports and Local | 154,305,639 = 26 % of the total | 79,116,277 = 5 % of the total |

In sacks and bags the Empire demand accounts for 55 per cent. of the total. Apart from Indian local and country ports combined, Anzac takes the biggest share both numerically and in weight. Besides twill sacks and packs, a large quantity of hessian bran bags and tarpaulin cement bags go to these colonies.

On the hessian side the United States take over 60 per cent. of the cloth, besides large cargoes of wheat pockets and hessian Fiji sugar bags. South America ranks next for hessians.

A statement in the appendix will give an idea

of the distribution of the various fabrics other than Indian local and country coast ports.

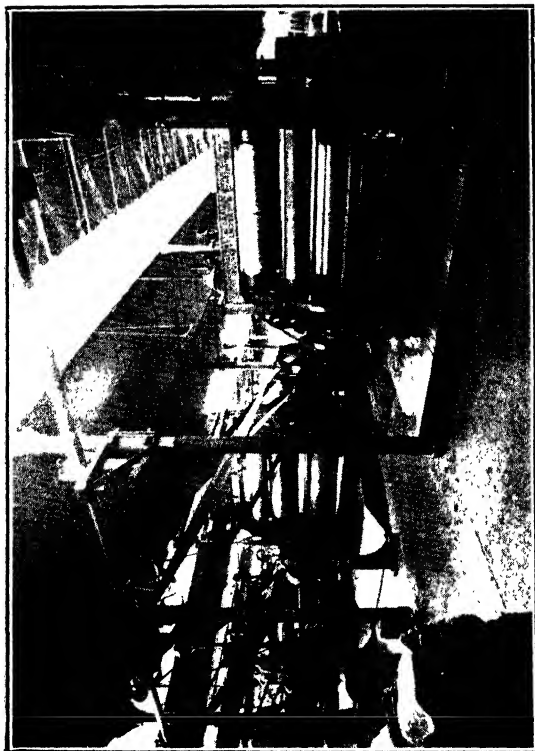
RELATIVE OUTPUT OF HESSIAN AND SACKING

The following table will illustrate how the mills have concentrated on hessian manufactures since they secured the 'Frisco wheat pocket orders in the 'eighties of last century :

| | 1880 | | 1890 | | 1900 | |
|--|--------|----------------------------------|--------|----------------------------------|--------|----------------------------------|
| | Looms. | Fin- ished Cloth. Tons. | Looms. | Fin- ished Cloth. Tons. | Looms. | Fin- ished Cloth. Tons. |
| Twill Sacking and D. W. Bagging .. | 3,490 | 116,600 | 5,360 | 154,780 | 8,100 | 273,300 |
| Single Warp Hessian .. | 1,480 | 22,300 | 2,300 | 33,150 | 6,150 | 97,100 |
| | 4,970 | 138,900 | 7,660 | 187,930 | 14,250 | 370,400 |
| Hessian % = | 30 % | 16 % | 30 % | 18 % | 43 % | 26 % |

| | 1910 | | 1920 | | 1926 | |
|--|--------|---------|--------|---------|--------|---------|
| | | | | | | |
| Twill Sacking and D. W. Bagging .. | 13,420 | 487,620 | 16,120 | 521,200 | 18,540 | 545,100 |
| Single Warp Hessian .. | 18,330 | 282,050 | 24,350 | 360,100 | 31,300 | 393,270 |
| | 31,750 | 769,670 | 40,470 | 881,300 | 49,840 | 938,370 |
| Hessian % = | 57 % | 37 % | 60 % | 40 % | 63 % | 42 % |

In 1880 the proportion of hessian looms was 30 per cent. and in weight of output 16 per cent. of the combined total. By 1926 the respective figures were: Looms, 63 per cent; output, 42 per cent.



CALENDERING AND MANGLING

CHAPTER XVII

QUALITY AND YIELD OF THE JUTE CROPS

Presumably this hessian trend extended to other manufacturing centres and increased demand for the better qualities of jute. Modern methods of batching and improved machinery renders quality of less importance than formerly, but there has lately been growing complaints of a general falling off in quality as well as in the crop yield. Quite a mass of literature might be quoted relating to extensive research in the matter of seed and methods of cultivation, which for some years has been engaging the attention of Government at the instigation of the trade, both Indian and home. Much was expected in yield from initial trials on Government farms with one selected seed. But tested on the larger scale, quantity was only attained at the expense of quality, and so far the results leave much to be desired. A reliable supply of conveniently placed clean water throughout the growing areas in the retting seasons would go far to maintain

quality, and perhaps the P.W.D. will yet be invited to devise means to counteract the vagaries of the monsoons in this respect. The increasing area intensifies the need and justifies necessary expenditure. The Indian export toll on exported raw and manufactured jute since 1922-3 amounts to almost 20 crores of rupees ; surely a portion of this vast levy could be usefully applied to help the cultivator. Speaking of the P.W.D., has the assistance of the district officials in this department been made full use of to check the figures and prevent such official jugglery as happened with the 1910 official jute forecast and the more glaring cases since? The 1920 forecast showed a glaring underestimate of the crop, with disastrous effects on the market. But worse was to follow. In 1921, for some occult reason, the sown area was estimated at 15 lacs acres against an average of 28 lacs for the previous ten years and the forecast underestimated the crop by about 80 per cent. Next year, with sardonic indifference to the legitimate interests of the whole trade, unwittingly or consciously, the parasites were again pandered to. The estimated area was put at the low figure of 18 lacs acres and the forecast again widely underestimated the crop. In issuing the first forecast July, 1923,

the Director of Agriculture, with official complaisance, admitted an error of 27 per cent. underestimated in the previous year's area figures. These marvellous results followed a reduction of Rs. 22,500 in the forecast staff salary bill. Subsequent Forecasts have still been too wide of the mark to inspire confidence and avert needless fluctuations in the jute market.

FEARS OF INADEQUATE JUTE SUPPLY

Parallel with the question of tapering the abnormally increased output of manufactured goods in line with demand, which has been exercising the mind of the Indian Jute Mills Association lately, is the outlook for raw material supply when markets for jute goods reach the full effective turnout of the mills. Consumption under the 54 hour week is estimated at 54 lacs of bales, and the ominous statement has been seriously expressed that when the mills return to full working days (a most unlikely happening), the requirements will be 81 lacs of bales. Yes, if the machinery was self-acting in the matter of feeding and delivering, but the human element upsets the simple rule. Just as surely as the piece-workers on short time and time workers encouraged by bonuses will pull out a relatively much

higher output, so certainly will they slack off in full time and give a relatively lower return, making 70-75 lacs a more likely expectation. But let that pass, there is no need for excessive pessimism ; when goods are wanted the ryot will deliver the material. Outside the official forecasts there never has been a jute famine. Famine prices, if you like, often as not through underestimated forecasts inducing precipitate buying on the part of consumers of raw jute.

CHAPTER XVIII

BENGAL MILLS PRESBYTERIAN ASSOCIATION

The Presbyterian Padres in Calcutta used to hold occasional services at the mill centres, which were appreciated by the European staffs, who now number, including all the mills, over a thousand souls. In 1910 the mills combined to form "The Bengal Mills Presbyterian Association," engaging two permanent Padres to carry on the good work.

CHINESE AND INDIAN LABOUR A MISLEADING COMPARISON

Kept within the bounds of truth, missionary zeal is an excellent trait, but it is seldom one comes across such a hideous misrepresentation of facts as the reference to labour conditions in Calcutta jute mills in a recent book, *The Cost of a New World*. Without belittling the value of the book, which is a thoughtful indictment of industrial exploitation in some parts of the East, Truth demands an emphatic denial of the follow-

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ing statement quoted from p. 84 of the book. Referring to conditions of labour in Chinese cotton mills, the writer proceeds :

“ The same sordid story is true of the Calcutta Jute Mills. Dividends, the total amount of their capital, is by no means unknown. Some of them have good English and Scottish names and, unfortunately, the consumer in whatever land he lives is the unconscious employer of sweated labour.”

The Chinese conditions on which he bases this comparison, quoting from p. 73, reads :

“ In some of the Shanghai cotton mills, children of from 7 to 12 years, work twelve hours a day on a night and day shift. Tiny children do odd jobs at age of six and regular work at eight for long shifts of twelve hours.”

Again, p. 77 :

“ Of one Chinese mill it has been written, the profits of the factory again surpassed \$500,000. For the past two years it has been running day and night with scarcely any intermission. It will be seen that the company is in a favourable position, at their doors abundant and absurdly cheap labour, no vexatious factory laws, it is not surprising that their annual profits have exceeded their total capital.”

At no period have the conditions in Calcutta jute mills been comparable to the present Chinese conditions, unless in the matter of profits, which is beside the case. Did home

industries not earn equally inflated War profits, and after all, what percentage do they bear on the present market capital value?

It may be fair to assume that the statement in *The Cost of a New World* was based on erroneous information. But the pity of it is that such comparisons impart credence to a recent impeachment of missionaries by Lord Inchcape which, if his lordship will pardon the assumption of one who remembers him of old, must have been uttered, like King David's famous saying, in a transient mood of ire.

Compared with the conditions of many of the confined dingy home factories, the Indian mills are a paradise to work in. With open park-like compounds, where there is ample drinking water and native vendors of food and sweetmeats, as well as tea and coffee, to meet the desires of the workers.

FACTORY ACT, 1922, AND SOCIAL CONDITIONS

Sir John Leng's personal observations in 1894-5 amply contradict the scandalous libel on all connected with Calcutta jute mill management, which has voluntarily done so much for the uplift and general welfare of Indian workers. Since Sir John's visit several concessions have been made to Western ideas. In 1922 the age of

children was raised from 9 and under 12 years to 12 and under 15. In the upper age figure India led the U.K. and most of the U.S. of America, where at the age of 14 years young people might work full time. The companies continue to spend vast sums out of revenue on workers' dwellings, which are as superior to the quarters most of them would otherwise be living in as the new home workers' houses are to the slums. Some of the companies house practically all their workers. Others, with smaller compounds, finding it difficult to get land for housing, induced the authorities to give facilities for compulsory acquisition of ground at their expense for housing. That sanitary arrangements and drinking water supply are efficiently carried out is particularly evidenced by statistics during periodic epidemic outbreaks.

A start has been made in health centres and baby clinics. In this connection the visitors' book at the Titaghur Clinic contains an entry from Miss Winslow, of the Welfare Workers' Society, Washington :

" I have seen many factories in the United States, but in none of them have I ever seen more constructive work than that which is being done in the Titaghur health centre."

CHAPTER XIX

WORKING TIME AND SUGGESTED GOVERNMENT RESTRICTION

As against the four-day 54-hour week, about 50 per cent. of the looms are now working on the five-day week of same number of hours. This method probably makes the less favourably placed mills for labour more independent. The movement must have thrown many thousands of workers idle, and were it to become general, over 100,000 hands would probably be affected.

A year ago a suggestion was put forward *in the name of humanity* inviting Government to legalise a shorter working day by a later start and earlier stop of machinery *in order to stabilise the industry for its own sake and in the interest of the workers!* It seems a simple, easy way, but humanity is not simple.

Keeping in mind that the three hundred thousand odd Calcutta jute mill employees works out at six per loom, whereas it is nearer three in Dundee, it will be seen there is ample scope for

convenient breaks, which workers take full advantage of in the open mill compounds, thus minimising the actual working time to less than 9 hours per day, the suggested restriction would mean more arduous spells of work with fewer breaks, and deprive a mass of workers, equal to more than half the population in Dundee, of congenial healthy employment, to say nothing of their families. The resentment shown by workers, in some cases leading to strikes, when changes from the shift system to single shift have been made, amply demonstrates their preference for the multiple shift system. As regards the early starting hour and late stop, in sultry Bengal a majority of workers, given the choice, naturally prefer these periods for work. The situation is not to be compared with colder climes. The Government's job is to see that the inspecting staff under the Act is efficient.

So much from the employees' side of the question. As far as the welfare of the industry itself is concerned in relation to markets, a guillotine restriction such as suggested would stabilise it with a vengeance. In all probability prices of mill fabrics would soar to a point inimical to the industry unless the chopper was suspended until an inevitable flood of new mills appeared

on the scene, which might be agreeable in some interested quarters.

The bare facts in the situation seem to deprecate undue Government interference and rather emphasise the necessity for mills to retain their latent reserve of output under the existing Act, judiciously releasing it as markets improve, instead of drying it up to invite an indiscriminate rush of new mills. This potential reserve of output is in all probability equal to feed any likely increase in demand for a generation.

L'ENVOI

That the mills have, despite occasional friction, succeeded in keeping output in line with demand since the Armistice has been of immense benefit to the War babies, and enabled the older concerns to conserve the boon bestowed on them by the War, which filled their depreciation and reserve chests, in some cases equal to the capital invested, besides returning dividends averaging good percentages even on the inflated prices the original stock scrips now stand at.

If past experiences have not lessened the associated mills into loyalty to their own joint-bonds directed to the vital interests of the industry, then God preserve it.

Markets have now assumed a brighter outlook and the financial position of the mills is such as to put them in a position to weather for all time the fluctuating dangers of markets provided agents curb their ambitions and the quality of mutual trust prevails in all ranks when knotty points crop up for discussion.



GENERAL VIEW OF BARNAGORE JUTI MILL.

APPENDICES

LOOMS AND SPINDLES.

List of Looms at Different Periods.

| | | | | Sacking. | Hessian. | TOTAL. |
|--|------|----|----|----------|----------|-----------|
| June, | 1859 | .. | .. | — | — | 192 |
| June, | 1869 | .. | .. | — | — | 950 |
| June, | 1873 | .. | .. | — | — | 1,250 |
| April, | 1877 | .. | .. | 2,948 | 910 | 3,858 |
| August, | 1878 | .. | .. | — | — | 3,858 |
| August, | 1879 | .. | .. | — | — | 4,572 |
| November, | 1883 | .. | .. | — | — | 5,376 |
| May, | 1884 | .. | .. | — | — | 5,691 |
| December, | 1885 | .. | .. | 4,900 | 1,800 | 6,700 |
| January, | 1887 | .. | .. | — | — | 7,200 |
| January, | 1890 | .. | .. | 5,359 | 2,300 | 7,659 |
| June, | 1892 | .. | .. | — | — | 8,195 |
| March, | 1895 | .. | .. | — | — | 9,536 |
| December, | 1895 | .. | .. | 6,584 | 3,117 | 9,701 |
| March, | 1897 | .. | .. | 7,478 | 5,506 | 12,984 |
| January, | 1901 | .. | .. | 8,613 | 6,600 | 15,213 |
| " | 1902 | .. | .. | 8,316 | 8,201 | 16,517 |
| " | 1903 | .. | .. | 8,747 | 8,727 | 17,474 |
| " | 1904 | .. | .. | 9,227 | 10,551 | 19,778 |
| " | 1905 | .. | .. | 9,786 | 11,409 | 21,195 |
| " | 1906 | .. | .. | 10,805 | 12,756 | 23,561 |
| " | 1907 | .. | .. | 11,891 | 14,785 | 26,676 |
| " | 1908 | .. | .. | 12,539 | 16,432 | 28,971 |
| " | 1909 | .. | .. | 12,950 | 17,735 | 30,685 |
| " | 1910 | .. | .. | 13,421 | 18,334 | 31,755 |
| " | 1911 | .. | .. | 13,992 | 18,719 | 32,711 |
| " | 1912 | .. | .. | 14,002 | 18,630 | 32,632 |
| " | 1913 | .. | .. | 15,791 | 21,050 | 36,841 |
| " | 1914 | .. | .. | 15,832 | 22,288 | 38,120 |
| " | 1915 | .. | .. | 15,751 | 22,603 | 38,354 |
| " | 1916 | .. | .. | 15,871 | 22,781 | 38,652 |
| " | 1917 | .. | .. | 15,868 | 23,197 | 39,065 |
| " | 1918 | .. | .. | 15,975 | 23,426 | 39,401 |
| " | 1919 | .. | .. | 16,075 | 23,376 | 39,451 |
| " | 1920 | .. | .. | 16,124 | 24,353 | 40,477 |
| " | 1921 | .. | .. | 16,445 | 24,453 | 40,898 |
| " | 1922 | .. | .. | 16,354 | 24,985 | 41,339 |
| " | 1923 | .. | .. | 17,452 | 28,111 | 45,563 |
| " | 1924 | .. | .. | 18,266 | 29,732 | 48,018 |
| " | 1925 | .. | .. | 18,344 | 31,055 | 49,399 |
| " | 1926 | .. | .. | 18,541 | 31,307 | 49,848 |
| " | 1927 | .. | .. | 19,353 | 31,001 | 50,354 |
| Spinning Spindles | | | | | 1927 | |
| Sacking and Bagging Weft | | | | | | 120,510 |
| Sacking and Bagging Warp and Hessian Weft and Warp | | | | | | 937,500 |
| Total Spindles | | | | | | 1,058,010 |

| Mills. | Agents or Proprietors. |
|-------------------------------|--------------------------------------|
| Albion | Andrew Yule & Co. Ltd. |
| Alexandra | Begg, Dunlop & Co. Ltd. |
| Alliance (2 Mills) | Do. |
| Anglo-India (4 Mills) | Duncan Brothers & Co. |
| Angus | The Angus Co. Ltd. |
| Auckland | Bird & Co. |
| Balliaghatta | Jas. Luke & Sons |
| Bally | George Henderson & Co. Ltd. |
| Bansberia | Macneill & Co. |
| Barnagore (3 Mills) | George Henderson & Co. Ltd. |
| Belvedere | Andrew Yule & Co. Ltd. |
| Birla | Birla Bros. Ltd. |
| Budge-Budge (2 Mills) | Andrew Yule & Co. Ltd. |
| Caledonian | Do. |
| Champdany | James Finlay & Co. Ltd. |
| Cheviot | Andrew Yule & Co. Ltd. |
| Clive (2 Mills) | Bird & Co. |
| Craig | Begg, Dunlop & Co. Ltd. |
| Dalhousie | Bird & Co. |
| Delta | Andrew Yule & Co. Ltd. |
| Empire | McLeod & Co. |
| Fort Gloster (3 Mills) | Kettlewell, Bullen & Co. Ltd. |
| Fort William (2 Mills) | Do. |
| Ganges (2 Mills) | Macneill & Co. |
| Gondalpara | Gillanders, Arbuthnot & Co. |
| Gourepore (2 Mills) | Barry & Co. |
| Hastings (2 Mills) | Birkmyre Bros. |
| Hooghly | Gillanders, Arbuthnot & Co. |
| Howrah (3 Mills) | Jardine, Skinner & Co. |
| Hukumchand | Sir S. C. Hukumchand & Co. |
| India (2 Mills) | Mackinnon, Mackenzie & Co. |
| Kamarhatti (2 Mills) | Jardine, Skinner & Co. |
| Kanknarrah (2 Mills) | Do. |
| Kelvin | McLeod & Co. |
| Khardah (2 Mills) | Anderson, Wright & Co. |
| Kinnison (2 Mills) | F. W. Heilgers & Co. |
| Lansdowne | Bird & Co. |
| Lawrence | Do. |
| Lothian | Andrew Yule & Co. Ltd. |
| Ludlow | Ludlow Jute Co. Ltd. |
| Megna | Mackinnon, Mackenzie & Co. |
| Naihati | F. W. Heilgers & Co. |
| Naroldanga | Jas. Park & Co. |
| National | Andrew Yule & Co. Ltd. |
| New Central | Do. |
| Northbrook | Bird & Co. |
| Nuddea | Barry & Co. |
| Orient | Andrew Yule & Co. Ltd. |
| Presidency | McLeod & Co. |
| Reliance | Jardine, Skinner & Co. |
| Samnuggur (3 Mills) | Thos. Duff & Co. Ltd. |
| Soorah | McLeod & Co. |
| Standard | Bird & Co. Ltd. |
| Titagbur (2 Mills) | Thos. Duff & Co. Ltd. |
| Union | Bird & Co. |
| Union South | Do. |
| Victoria (2 Mills) | Thos. Duff & Co. Ltd. |
| Waverley | Begg, Dunlop & Co. Ltd. |
| Wellington | James Finlay & Co. Ltd. |
| 59 Companies. | |
| 84 Mills. | |

MILLS IN 1927.

| Sacking. | Hessian. | Looms, G. Total. | Mills. | Original Mill Erected. |
|----------|----------|---------------------|---------------------|---------------------------|
| 300 | 40 | 340 | Albion | 1910 |
| 108 | 288 | 396 | Alexandra | 1905 |
| 328 | 674 | 1,002 | Alliance | 1897 |
| 928 | 1,572 | 2,500 | Anglo-India | — |
| 308 | 888 | 1,196 | Angus | 1912 |
| 360 | 450 | 810 | Auckland | 1908 |
| 75 | 105 | 180 | Balliaghatta | 1875 |
| 250 | 575 | 825 | Bally | 1908 |
| 252 | 252 | 504 | Bansberia | 1926 |
| 625 | 1,119 | 1,744 | Baranagore | 1859 |
| 219 | 431 | 650 | Belvedere | 1908 |
| 300 | 500 | 800 | Birla | 1921 |
| 410 | 372 | 782 | Budge-Budge | 1874 |
| 300 | 50 | 350 | Caledonian | 1916 |
| 231 | 292 | 523 | Champdany | 1873 |
| 50 | 350 | 400 | Cheviot | 1920 |
| 472 | 396 | 868 | Clive | 1875 |
| 85 | 165 | 250 | Craig | 1921 |
| 224 | 480 | 704 | Dalhousie | 1905 |
| 400 | 210 | 610 | Delta | 1899 |
| 248 | 188 | 436 | Empire | 1913 |
| 692 | 1,108 | 1,800 | Fort Gloster | 1873 |
| 358 | 542 | 900 | Fort William | 1874 |
| 702 | 798 | 1,500 | Ganges | 1875 |
| 180 | 200 | 380 | Gondalpara | 1895 |
| 406 | 948 | 1,354 | Gourepore | 1862 |
| 493 | 584 | 1,077 | Hastings | 1875 |
| 254 | 200 | 454 | Hooghly | 1888 |
| 652 | 1,011 | 1,663 | Howrah | 1874 |
| 423 | 678 | 1,101 | Hukumchand | 1922 |
| 472 | 561 | 1,033 | India | 1866 |
| 496 | 1,214 | 1,710 | Kamarbatty | 1877 |
| 280 | 1,261 | 1,521 | Kanknarrah | 1884 |
| 346 | 290 | 636 | Kelvin | 1908 |
| 515 | 855 | 1,370 | Khardah | 1895 |
| 574 | 647 | 1,221 | Kinnlson | 1897 |
| 347 | 523 | 870 | Lansdowne | 1898 |
| 304 | 400 | 704 | Lawrence | 1907 |
| 100 | 250 | 350 | Lothian | 1917 |
| 60 | 404 | 464 | Ludlow | 1920 |
| 392 | 616 | 1,008 | Megna | 1922 |
| 299 | 401 | 700 | Naihati | 1907 |
| 14 | — | 14 | Narcoldanga | 1901 |
| 340 | 271 | 611 | National | 1900 |
| 300 | 286 | 586 | New Central | 1875 |
| 196 | 348 | 544 | Northbrook | 1908 |
| 392 | 616 | 1,008 | Nuddea | 1921 |
| 50 | 400 | 450 | Orient | 1920 |
| 151 | 224 | 375 | Presidency | 1921 |
| 300 | 700 | 1,000 | Reliance | 1908 |
| 510 | 1,442 | 1,952 | Samnuggar | 1874 |
| 180 | 195 | 375 | Soorah | 1874 |
| 278 | 362 | 640 | Standard | 1896 |
| 592 | 1,126 | 1,718 | Titagbur | 1884 |
| 204 | 300 | 504 | Union | 1874 |
| 375 | 275 | 650 | Union South | — |
| 309 | 958 | 1,267 | Victoria | 1884 |
| 100 | 200 | 300 | Waverley | 1921 |
| 284 | 410 | 694 | Wellington | 1865 |

PRODUCTION, BLOCK VALUE, ETC.

Present daily output of all fabrics :

Length exceeds ... 8,000 miles.

Weight exceeds ... 4,800 tons.

| | |
|--------------------------------|-------------|
| Machinery, Buildings and Block | £21,000,000 |
| Capital and Reserves | £31,000,000 |

| | | | | |
|-------------------|-----|-----|-----|---------|
| Number of Workers | ... | ... | ... | 325,000 |
|-------------------|-----|-----|-----|---------|

Wages paid monthly to Native Workers

Over Rs. 3,500,000

EXPORTS OF FINISHED BAGS AND CLOTH.

| COMBINED FOREIGN AND INDIAN COAST PORTS. | | | FOREIGN EXPORTS. | | |
|---|-------------------|---------|------------------|-------------------------------------|----------------------------|
| Year. | Cloth. | Bags. | | Yards Cloth (in millions). | Bags. (in millions.) |
| | Lacs of Yards. | Lacs. | | | |
| 1892 | 423.45 | 1505.17 | | | |
| 1893 | 697.13 | 1659.02 | | | |
| 1894 | 871.18 | 1729.02 | | | |
| 1895 | 1126.10 | 2177.01 | | | |
| 1896 | 1518.70 | 2030.85 | | | |
| 1897 | 2364.76 | 2527.33 | | | |
| 1898 | 2620.52 | 2394.91 | | | |
| 1899 | 2881.67 | 2110.72 | | | |
| 1900 | 3357.50 | 2500.46 | | | |
| 1901 | 3957.91 | 2621.43 | 1874-78 Average | 3.59 | 24.89 |
| 1902 | 4425.51 | 2961.25 | 1879-83 | 4.39 | 53.28 |
| 1903 | 5284.56 | 2689.14 | 1884-88 | 15.34 | 75.56 |
| 1904 | 5780.63 | 2602.25 | 1889-93 | 41.00 | 111.34 |
| 1905 | 6367.22 | 2844.46 | 1894-98 | 182.01 | 171.23 |
| 1906 | 6643.69 | 2976.29 | 1899-03 | 427.20 | 206.35 |
| 1907 | 7963.84 | 3515.38 | 1904-08 | 697.98 | 257.76 |
| 1908 | 7707.89 | 3779.44 | 1909-13 | 969.97 | 339.12 |
| 1909 | 9135.21 | 4221.59 | 1914-18 | 1156.11 | 667.66 |
| 1910 | 10076.41 | 4514.37 | 1919-20 Yearly | 1275.12 | 342.73 |
| 1911 | 8595.28 | 3584.54 | 1920-21 | 1352.74 | 533.91 |
| 1912 | 9738.06 | 3782.06 | 1921-22 | 1120.56 | 386.71 |
| 1913 | 11103.50 | 4337.60 | 1922-23 | 1254.34 | 344.23 |
| 1914 | 10188.59 | 4207.42 | 1923-24 | 1348.74 | 413.72 |
| 1915 | 11481.10 | 7340.58 | 1924-25 | 1456.29 | 425.14 |
| 1916 | 12042.23 | 8644.44 | 1925-26 | 1461.39 | 425.08 |
| 1917 | Not available. | | | | |
| 1918 | do. | | | | |
| 1919 | 11545.94 | 4030.38 | | | |
| 1920 | 14526.06 | 5566.44 | | | |
| 1921 | 11160.54 | 4694.00 | | | |
| 1922 | 12596.59 | 4039.97 | | | |
| 1923 | 13706.77 | 4586.48 | | | |
| 1924 | 14202.30 | 4758.60 | | | |
| 1925 | 15033.99 | 5153.35 | | | |
| 1926 | 15051.33 | 4987.91 | | | |

Bags used locally and shipped to Indian Ports consist chiefly of Heavy Cees for Burmah Rice, and Light Cees, A and B Twill Sacks and E Bags for other country Grain and Seed Crops.

DISTRIBUTION OF THE PRINCIPAL FOREIGN

| | Wool Packs. | Corn Sacks. | Bran Bags. |
|-------------------------|--------------|-------------|--------------|
| London | — | — | — |
| Liverpool | 11,750 | 21,000 | 60,000 |
| Continent | — | 97,200 | — |
| Egypt and Levant | — | — | — |
| Cape Colonies | 7,83,650 | — | 6,000 |
| Australia | 28,42,300 | 6,68,96,900 | 83,63,600 |
| New Zealand | 7,83,450 | 18,07,150 | 2,41,800 |
| North America | — | — | — |
| South America | 8,250 | 75,000 | — |
| West Indies | — | — | — |
| Total | 44,29,400 | 6,88,97,250 | 86,71,400 |
| | Cement Bags. | Coal Bags. | Coffee Bags. |
| London | — | — | — |
| Liverpool | — | — | — |
| Continent | 3,00,000 | — | — |
| Egypt and Levant | — | 8,000 | — |
| Cape Colonies | 15,48,000 | — | — |
| Australia | — | — | — |
| New Zealand | 30,00,500 | — | — |
| North America | — | — | 6,600 |
| South America | — | — | — |
| West Indies | — | — | 22,300 |
| Total | 48,48,500 | 8,000 | 28,900 |
| | B. Twill. | L. Twill. | No. 2 Twill. |
| London | 11,27,300 | 50,500 | — |
| Liverpool | 87,88,000 | 37,03,900 | 1,20,000 |
| Continent | 28,39,200 | 7,83,700 | 35,100 |
| Egypt and Levant | 42,71,800 | 9,59,750 | 30,000 |
| Cape Colonies | 54,41,900 | 90,29,700 | 5,81,900 |
| Australia | 17,98,750 | 64,700 | — |
| New Zealand | 1,52,000 | — | — |
| North America | 2,96,420 | 44,700 | 13,500 |
| South America | 44,86,800 | 74,35,800 | — |
| West Indies | 16,70,650 | 5,03,600 | — |
| Total | 3,08,22,320 | 2,25,75,750 | 7,30,500 |
| | T. Cloth. | | |
| United Kingdom | 26,42,000 | | |
| Australia | 88,37,000 | | |
| North America | 3,54,000 | | |
| South America | 91,37,000 | | |

EXPORTS OF BAGS AND CLOTH, 1926.

| Ore Bags. | Hessian Bags. | Wheat Bags. | D. W. Bags. | Twill Bags. | A. Twill. |
|---------------|---------------|-------------|------------------|---------------|--------------|
| — | 48,37,450 | — | — | — | — |
| 1,80,000 | 1,24,22,200 | — | 37,500 | 5,02,450 | 18,28,800 |
| — | 25,86,000 | — | — | 2,60,450 | 50,700 |
| 24,000 | 5,91,000 | — | — | 3,08,700 | 40,000 |
| — | 18,77,500 | — | — | 18,83,900 | 46,500 |
| 2,49,100 | 20,000 | 10,000 | — | 44,000 | 4,45,000 |
| 38,000 | 88,000 | 3,09,000 | 58,000 | 52,500 | 38,90,050 |
| — | 5,25,300 | 2,81,77,000 | 1,26,000 | 2,86,000 | — |
| 21,88,600 | 9,45,000 | — | 12,000 | 1,56,350 | 77,100 |
| — | 22,000 | — | 75,500 | 13,70,300 | 7,500 |
| 26,79,700 | 2,39,12,450 | 2,84,96,000 | 3,07,000 | 48,62,650 | 53,85,650 |
| Cotton Packs. | Potato Bags. | Onion Bags. | Fiji Sugar Bags. | Nitrate Salt. | Other Sorts |
| — | — | — | — | — | — |
| — | — | — | — | — | 50,000 |
| 39,29,450 | — | 24,99,000 | — | — | — |
| — | — | — | — | — | 1,04,850 |
| — | 1,95,000 | — | — | — | 71,400 |
| — | — | — | 91,200 | — | 2,80,900 |
| — | — | — | 82,83,600 | — | 26,000 |
| — | — | — | — | 2,36,76,800 | — |
| — | — | — | — | — | 1,24,700 |
| 39,29,450 | 1,95,000 | 24,99,000 | 83,74,800 | 2,36,76,800 | 6,57,850 |
| Sugar Bags. | Salt Bags. | Flour Bags. | E. Bags. | C. Bags. | Grain Sacks. |
| 92,800 | 1,33,500 | 1,22,800 | — | — | — |
| 25,87,600 | 3,35,500 | 10,49,800 | 22,500 | 8,000 | — |
| 27,72,800 | 67,500 | 3,76,900 | 25,000 | 37,95,600 | 8,52,950 |
| 15,08,900 | 24,000 | 4,800 | 33,27,000 | 1,96,900 | 22,40,850 |
| 5,000 | 1,01,500 | 1,63,000 | 1,72,500 | 1,15,200 | — |
| — | 30,000 | — | — | — | — |
| — | — | — | — | — | — |
| 5,63,400 | — | 40,000 | — | 15,05,200 | — |
| 8,56,400 | 40,000 | 7,200 | 31,41,000 | 1,55,300 | — |
| 2,98,17,700 | 54,000 | — | — | 39,83,200 | — |
| 3,82,04,600 | 7,86,000 | 17,64,500 | 66,88,000 | 97,59,400 | 30,93,800 |
| Hessians. | D. W. Cloth. | Hop Cloth. | C. Bagging. | Salt Cloth. | C. Cloth |
| 4,73,63,150 | — | — | — | — | — |
| 1,77,28,988 | — | — | — | — | — |
| 98,68,04,430 | 4,02,900 | 2,91,200 | 5,40,69,026 | — | 3,34,000 |
| 29,97,70,250 | — | — | — | — | — |

COMPARATIVE STATEMENT OF ANNUAL JUTE

| SEASONS. | FINAL FORECAST. | |
|-----------------|-------------------------------|--|
| | Estimated Acreage sown. | Estimated Yield in Bales (Pucca). |
| | Acres. | Lacs of Bales. |
| 1892-93 | 19,97,439* | 57·0* |
| 1893-94 | 21,44,386 | 48·0 |
| 1894-95 | 22,36,500 | 60·6 |
| 1895-96 | 22,42,700 | 64·2 |
| 1896-97 | 22,20,400 | 57·5 |
| 1897-98 | 21,47,900 | 68·5 |
| 1898-99 | 16,24,400 | 46·0 |
| 1899-00 | 19,71,300 | 50·0 |
| 1900-01 | 20,43,400 | 60·0 |
| 1901-02 | 22,49,000 | 65·0 |
| 1902-03 | 22,00,000 | 52·8 |
| 1903-04 | 22,50,000 | 65·0 |
| 1904-05 | 28,50,000 | 73·0 |
| 1905-06 | 31,44,600 | 84·0 |
| 1906-07 | 35,23,200 | 88·8 |
| 1907-08 | 38,83,200 | 97·6 |
| 1908-09 | 28,41,000 | 64·0 |
| 1909-10 | 27,32,700 | 73·0 |
| 1910-11 | 29,37,800 | 80·0 |
| 1911-12 | 31,06,400 | 83·2 |
| 1912-13 | 29,70,400 | 98·4 |
| 1913-14 | 31,69,600 | 87·5 |
| 1914-15 | 33,68,737 | 105·8 |
| 1915-16 | 23,75,918 | 74·24 |
| 1916-17 | 27,02,699 | 88·80 |
| 1917-18 | 27,35,999 | 89·29 |
| 1918-19 | 25,00,382 | 70·19 |
| 1919-20 | 28,38,875 | 85·41 |
| 1920-21 | 25,08,778 | 69·79 |
| 1921-22 | 15,18,358 | 40·65 |
| 1922-23 | 17,99,800 | 54·86 |
| 1923-24 | 27,87,508 | 84·73 |
| 1924-25 | 27,70,403 | 81·20 |
| 1925-26 | 29,26,254 | 78·51 |
| 1926-27 | 38,46,200 | 108·89 |

*These figures are subject to belated revision by the Government Compiler.

FORECASTS AND ACTUAL VISIBLE CROPS.

| ACTUALS. | | | | | |
|-----------------------------|------------------------------|--|-----------------------------------|--|---|
| Actual Mill Consumpt. | Mills Bought ex. Crop. | Actual Exports from Calcutta and Chittagong | Estimated Country Consumpt. | Gross Total in Bales (Pucca). † | Crop fell short or Exceeded Forecast by |
| Lacs of Bales. | Lacs of Bales. | Lacs of Bales. | Lacs of Bales. | Lacs of Bales. | Lacs of Bales. |
| — | — | 30.77 | — | — | — |
| — | — | 25.28 | — | — | — |
| — | — | 36.03 | — | — | — |
| 15.57 | — | 34.94 | 5 | — | — |
| 18.76 | — | 32.87 | 5 | — | — |
| 20.70 | — | 42.09 | 5 | — | — |
| 20.31 | — | 27.44 | 5 | — | — |
| 22.48 | — | 26.00 | 5 | — | — |
| 24.51 | — | 35.42 | 5 | — | — |
| 25.51 | — | 43.14 | 5 | — | — |
| 27.45 | — | 32.53 | 5 | — | — |
| 28.92 | — | 37.65 | 5 | — | — |
| 30.77 | 28.86 | 35.25 | 5 | 69.11 | —4.6 |
| 29.57 | 34.27 | 41.36 | 5 | 80.63 | —3.4 |
| 34.31 | 38.37 | 45.06 | 5 | 88.43 | — .4 |
| 36.58 | 39.05 | 42.76 | 5 | 86.81 | —10.8 |
| 35.93 | 36.49 | 46.31 | 5 | 87.80 | +23.8 |
| 44.59 | 42.69 | 40.09 | 5 | 87.78 | +14.7 |
| 39.80 | 36.72 | 35.31 | 5 | 77.03 | —2.9 |
| 37.56 | 41.62 | 46.28 | 5 | 92.88 | +9.6 |
| 44.35 | 47.41 | 49.42 | 5 | 101.83 | +3.4 |
| 43.74 | 43.95 | 41.92 | 5 | 90.87 | +3.3 |
| 48.05 | 60.10 | 29.67 | 5 | 94.77 | —10.5 |
| 56.09 | 53.28 | 31.06 | 5 | 89.34 | +15.1 |
| 55.20 | 53.50 | 28.10 | 5 | 86.60 | +2.6 |
| 52.96 | 61.42 | 17.26 | 5 | 83.68 | —5.61 |
| 49.97 | 49.43 | 21.93 | 5 | 76.36 | +6.17 |
| 50.82 | 60.89 | 33.58 | 5 | 99.47 | +14.06 |
| 54.67 | 50.45 | 23.43 | 5 | 78.88 | +19.09 |
| 42.36 | 44.54 | 29.68 | 5 | 79.22 | +38.57 |
| 46.15 | 29.87 | 29.02 | 5 | 63.89 | +9.03 |
| 50.04 | 51.16 | 37.71 | 5 | 93.87 | +9.14 |
| 55.19 | 47.89 | 38.22 | 5 | 91.11 | +9.91 |
| 53.44 | 53.35 | 35.16 | 5 | 93.51 | +15.00 |
| — | 73.39 | 44.69 | 5 | 123.08 | +14.19 |

† Represents actual visible crops, disregarding the varying stocks at beginning and close of the seasons, i.e. actual mills' purchases, and total exports of raw jute, plus a constant 5 lacs native consumption.

EXPORTS OF JUTE, REJECTIONS AND

From Calcutta

| SEASON. August to July. | TO UNITED KINGDOM. | | | TO FOREIGN EUROPE | | |
|-------------------------------------|--------------------|------------|-----------|-------------------|------------|-----------|
| | Jute. | Rejections | Cuttings. | Jute | Rejections | Cuttings. |
| 1880-81 | 12,13,304 | 23,936 | 58,027 | 58,549 | 100 | 88 |
| 1881-82 | 16,04,631 | 35,564 | 92,877 | 1,26,391 | — | 180 |
| 1882-83 | 21,79,052 | 21,864 | 1,05,625 | 1,36,076 | 815 | 20 |
| 1883-84 | 11,79,599 | 17,103 | 48,826 | 54,545 | 200 | — |
| 1884-85 | 16,01,528 | 26,381 | 78,511 | 1,48,673 | 50 | — |
| 1885-86 | 15,13,090 | 7,634 | 13,100 | 1,30,675 | 200 | 2 |
| 1886-87 | 15,93,950 | 23,637 | 58,548 | 1,89,333 | 143 | 397 |
| 1887-88 | 16,72,937 | 33,228 | 41,352 | 2,58,006 | 818 | 461 |
| 1888-89 | 18,94,996 | 53,757 | 1,20,479 | 3,90,019 | 2,385 | 50 |
| 1889-90 | 19,15,405 | 53,906 | 1,02,657 | 4,60,148 | 300 | 13,562 |
| 1890-91 | 18,68,480 | 50,128 | 17,165 | 7,24,455 | 160 | 1,015 |
| 1891-92 | 12,34,231 | 26,587 | 14,641 | 3,72,367 | 2,209 | 305 |
| 1892-93 | 16,82,360 | 35,480 | 49,589 | 7,40,947 | 2,587 | — |
| 1893-94 | 15,51,901 | 51,110 | 21,807 | 6,15,896 | 3,342 | 751 |
| 1894-95 | 17,71,147 | 49,796 | 55,686 | 11,09,719 | 3,047 | 5 |
| 1895-96 | 19,99,939 | 43,547 | 35,691 | 9,31,810 | 6,430 | 3,165 |
| 1896-97 | 17,82,022 | 69,805 | 49,883 | 9,30,667 | 2,614 | 3,448 |
| 1897-98 | 21,16,274 | 41,960 | 59,640 | 13,76,333 | 9,250 | 1,550 |
| 1898-99 | 13,77,913 | 16,839 | 29,223 | 9,05,886 | 250 | 82,763 |
| 1899-00 | 11,80,615 | 34,712 | 36,907 | 8,81,943 | 2,450 | 12,136 |
| 1900-01 | 14,48,230 | 37,226 | 27,206 | 14,66,623 | 12,835 | 9,941 |
| 1901-02 | 17,06,296 | 39,942 | 49,128 | 17,41,422 | 30,043 | 22,005 |
| 1902-03 | 13,50,758 | 27,830 | 30,175 | 13,89,704 | 16,196 | 7,470 |
| 1903-04 | 14,81,934 | 28,856 | 47,680 | 16,00,447 | 27,622 | 7,827 |
| 1904-05 | 13,65,329 | 29,848 | 42,979 | 15,39,606 | 2,970 | 1,428 |
| 1905-06 | 16,60,065 | 25,056 | 59,378 | 17,70,893 | 12,375 | 3,074 |
| 1906-07 | 17,61,430 | 23,318 | 57,025 | 20,30,573 | 20,866 | 4,502 |
| July to June } 1907-08 | 15,61,913 | 23,005 | 65,545 | 19,81,566 | 12,521 | 6,115 |
| 1908-09 | 15,64,608 | 16,372 | 40,791 | 20,12,823 | 17,014 | 4,696 |
| 1909-10 | 15,78,329 | 21,889 | 60,142 | 19,00,806 | 33,331 | 13,743 |
| 1910-11 | 12,02,074 | 41,535 | 67,205 | 17,98,248 | 41,645 | 14,691 |
| 1911-12 | 17,47,334 | 54,717 | 77,453 | 20,32,350 | 30,918 | 14,569 |
| 1912-13 | 17,90,974 | 52,353 | 75,802 | 22,28,286 | 62,411 | 17,743 |
| 1913-14 | 13,56,743 | 50,412 | 1,40,938 | 18,93,759 | 30,161 | 38,126 |
| 1914-15 | 15,48,804 | 48,932 | 69,933 | 6,86,670 | 13,299 | 5,883 |
| 1915-16 | 15,61,139 | 35,222 | 30,199 | 6,78,492 | 10,732 | 8,865 |
| 1916-17 | 12,17,981 | 58,693 | 40,879 | 7,44,023 | 19,713 | 2,413 |
| 1917-18 not available | — | — | — | — | — | — |
| January to June } 1918-19 | 4,27,753 | 24,413 | 16,503 | 3,71,128 | 25,566 | 145 |
| 1919-20 | 15,08,796 | 59,712 | 60,331 | 9,43,681 | 53,177 | 11,417 |
| 1920-21 | 5,12,413 | 15,332 | 19,087 | 10,64,296 | 35,324 | 14,980 |
| 1921-22 | 5,77,298 | 32,279 | 44,490 | 16,39,184 | 91,065 | 46,638 |
| 1922-23 | 5,96,103 | 54,181 | 60,151 | 13,92,595 | 75,161 | 38,289 |
| 1923-24 | 7,56,017 | 30,151 | 79,841 | 20,08,203 | 1,06,715 | 77,548 |
| 1924-25 | 8,12,263 | 54,415 | 88,155 | 21,42,789 | 98,700 | 19,024 |
| 1925-26 | 7,85,180 | 56,474 | 97,885 | 18,49,427 | 87,062 | 67,974 |

Fully one third may be taken as re-exported to the Continent.

CUTTING IN BALES OF 400 LBS. (in lacs).
and Chittagong.

| TO AMERICA. | | | TO THE INDIAN COAST. | | | TO AUSTRALIA. | | | TOTAL. |
|-------------|------------------|-----------|----------------------|------------------|-----------|---------------|------------------|-----------|-----------|
| Jute. | Rejec- tions. | Cuttings. | Jute. | Rejec- tions. | Cuttings. | Jute. | Rejec- tions. | Cuttings. | |
| 68,062 | 5,138 | 2,56,123 | 16,218 | — | — | 2,850 | — | 10 | 17,03,255 |
| 51,558 | 6,024 | 3,35,063 | 20,061 | 1 | 5 | 6,398 | 404 | 500 | 22,79,957 |
| 42,387 | 8,587 | 5,32,069 | 21,174 | — | 900 | 4,025 | — | 652 | 30,52,746 |
| 50,969 | 2,952 | 2,76,228 | 13,377 | 305 | 510 | 3,298 | — | 1,005 | 16,46,917 |
| 98,522 | 3,212 | 4,05,393 | 15,276 | 50 | — | 2,800 | — | — | 23,80,396 |
| 86,813 | 9,243 | 3,91,316 | 4,811 | 108 | 102 | 1,355 | — | 7 | 21,58,436 |
| 94,349 | 4,217 | 3,47,047 | 4,276 | 10 | — | 434 | — | — | 23,16,391 |
| 1,36,854 | 4,720 | 4,86,477 | 9,927 | 30 | 5 | 765 | — | — | 26,45,580 |
| 1,40,882 | 3,506 | 3,73,711 | 8,819 | 258 | — | 281 | — | 1,039 | 29,90,132 |
| 1,45,036 | 5,337 | 4,00,402 | 9,607 | 552 | 7 | 580 | — | — | 31,07,449 |
| 1,80,285 | 15,995 | 5,53,163 | 10,226 | 44 | — | 750 | — | 505 | 34,22,371 |
| 1,02,208 | 2,030 | 2,14,418 | 7,941 | 27 | — | 600 | — | 750 | 19,78,314 |
| 1,89,579 | 7,460 | 3,62,332 | 6,234 | 427 | 737 | 154 | — | 50 | 30,77,736 |
| 53,955 | 5,822 | 2,09,459 | 12,705 | 403 | 150 | 701 | — | 125 | 25,28,127 |
| 1,75,298 | 9,283 | 4,12,734 | 17,735 | — | — | 806 | — | 514 | 36,03,770 |
| 1,41,032 | 4,750 | 3,01,802 | 20,377 | 410 | 2,071 | 2,358 | — | 265 | 34,94,507 |
| 1,02,688 | 10,173 | 3,20,319 | 13,947 | 6 | 810 | 1,215 | — | 150 | 32,87,947 |
| 2,24,386 | 8,066 | 3,57,769 | 10,070 | — | 1,300 | 1,206 | — | 1,094 | 42,09,228 |
| 1,31,314 | 5,551 | 2,17,944 | 22,400 | 450 | 1,705 | 1,235 | — | 1,200 | 27,44,163 |
| 1,92,888 | 9,064 | 2,41,614 | 5,448 | 1,000 | 590 | 961 | — | 500 | 26,00,837 |
| 2,37,918 | 9,562 | 2,76,015 | 12,640 | 115 | 1,356 | 1,311 | — | 751 | 35,41,629 |
| 2,96,426 | 12,977 | 4,07,038 | 4,663 | — | 950 | 1,291 | 100 | 2,125 | 43,14,406 |
| 2,22,692 | 4,650 | 1,92,966 | 10,548 | — | 32 | 400 | — | 2 | 32,53,413 |
| 3,05,489 | 3,399 | 2,37,792 | 22,558 | — | 285 | 1,021 | 100 | 159 | 37,65,760 |
| 2,37,547 | 11,895 | 2,81,268 | 11,489 | — | — | 928 | — | 400 | 35,25,586 |
| 3,26,753 | 25,860 | 2,40,236 | 11,704 | 2 | — | 805 | 50 | 100 | 41,36,351 |
| 2,99,491 | 19,139 | 2,69,406 | 18,747 | 25 | 118 | 1,601 | — | 200 | 45,06,533 |
| 2,80,245 | 28,072 | 3,04,175 | 10,511 | 38 | 840 | 1,059 | 50 | 600 | 42,76,275 |
| 3,83,259 | 21,262 | 5,51,878 | 12,917 | 610 | 1,779 | 2,152 | — | 650 | 46,31,196 |
| 3,01,252 | 12,000 | 68,050 | 14,183 | 125 | 3,481 | 1,992 | 50 | — | 40,09,373 |
| 2,84,825 | 9,154 | 54,767 | 12,351 | 225 | 3,253 | 1,093 | — | — | 35,31,066 |
| 3,61,483 | 9,983 | 2,70,628 | 22,890 | 30 | 1,854 | 1,991 | — | — | 46,28,250 |
| 3,55,877 | 31,665 | 2,95,788 | 25,411 | — | 3,597 | 2,254 | — | — | 49,42,161 |
| 3,61,961 | 36,593 | 2,58,551 | 23,583 | 53 | 122 | 1,715 | 5 | — | 41,92,718 |
| 3,23,359 | 10,022 | 2,04,990 | 42,900 | — | 1,746 | 2,067 | 25 | 532 | 29,67,062 |
| 4,47,897 | 36,500 | 2,42,428 | 57,340 | — | 4 | 2,148 | 50 | 746 | 31,06,762 |
| 4,97,900 | 10,335 | 1,82,213 | 30,644 | 185 | 1,632 | 2,562 | 4 | 254 | 23,09,427 |
| — | — | — | — | — | — | — | — | — | 17,26,138 |
| 1,30,910 | 9,693 | 23,591 | 14,211 | — | 807 | 2,000 | — | — | 10,46,219 |
| 4,01,412 | 20,442 | 2,22,878 | 66,486 | 820 | 6,280 | 3,779 | — | — | 33,59,156 |
| 8,87,788 | 8,808 | 2,34,207 | 42,224 | 1,886 | 4,602 | 2,061 | — | — | 23,43,003 |
| 3,17,711 | 21,986 | 1,06,468 | 73,371 | 6,775 | 5,703 | 1,825 | — | — | 29,67,953 |
| 4,87,394 | 23,983 | 94,614 | 70,440 | 150 | 4,939 | 3,613 | — | — | 29,01,583 |
| 4,51,532 | 33,100 | 1,00,044 | 1,08,331 | 1,433 | 14,969 | 2,274 | — | — | 37,71,238 |
| 3,84,586 | 26,579 | 42,511 | 96,556 | 1,221 | 17,976 | 3,037 | — | — | 33,22,052 |
| 3,75,493 | 46,096 | 59,931 | 81,944 | 100 | 4,795 | 3,081 | — | — | 36,16,792 |

WORLD'S CONSUMPTION OF JUTE, INCLUDING REJECTIONS AND CUTTINGS,

In Bales of 400 lbs. each.

| | 1907-8. | 1908-9. | 1909-10. | 1910-11. | 1911-12. |
|---------------------------|-----------|-----------|------------|-----------|------------|
| Indian Mills (actual) ... | 3,716,514 | 3,650,615 | 4,530,703 | 4,042,774 | 3,815,730 |
| Indian Local (estimated) | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 |
| United Kingdom (est'd) | 1,345,000 | 1,295,000 | 1,245,000 | 1,125,000 | 1,250,000 |
| America (estimated) ... | 630,000 | 650,000 | 650,000 | 550,000 | 550,000 |
| Continent (estimated) ... | 2,269,500 | 2,237,500 | 2,315,000 | 2,280,000 | 2,400,000 |
| Total Bales ... | 8,461,014 | 8,333,115 | 9,240,703 | 8,497,774 | 8,515,730 |
| | 1912-13. | 1913-14. | 1914-15. | 1915-16. | 1916-17. |
| Indian Mills (actual) ... | 4,505,029 | 4,425,000 | 4,934,429 | 5,748,271 | 5,608,110 |
| Indian Local (estimated) | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 |
| United Kingdom (est'd) | 1,400,000 | 1,400,000 | 1,400,000 | 1,200,000 | 1,200,000 |
| America, etc. (estimated) | 650,000 | 650,000 | 650,000 | 750,000 | 800,000 |
| Continent (estimated) ... | 2,600,000 | 2,600,000 | *2,600,000 | 1,100,000 | 1,100,000 |
| Total Bales ... | 9,655,029 | 9,575,000 | | 9,298,271 | 9,208,110 |
| | 1917-18. | 1918-19. | 1919-20. | 1920-21. | 1921-22. |
| Indian Mills (actual) ... | 5,380,254 | 5,075,867 | 5,162,384 | 5,553,659 | 4,303,804 |
| Indian Local (estimated) | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 |
| United Kingdom (est'd) | 1,000,000 | 1,100,000 | 900,000 | 700,000 | 650,000 |
| America (estimated) ... | 700,000 | 800,000 | 800,000 | 800,000 | 750,000 |
| Continent (estimated) ... | 1,000,000 | 1,100,000 | 1,000,000 | 1,100,000 | 1,700,000 |
| Total Bales ... | 8,580,254 | 8,575,867 | 8,362,384 | 8,653,659 | 7,903,804 |
| | 1922-23 | 1923-24. | 1924-25. | 1925-26. | 1926-27. |
| Indian Mills (actual) ... | 4,688,615 | 5,084,214 | 5,806,426 | 5,429,164 | 5,600,000 |
| Indian Local (estimated) | 500,000 | 500,000 | 500,000 | 500,000 | 500,000 |
| United Kingdom (est'd) | 850,000 | 950,000 | 1,000,000 | 950,000 | 1,000,000 |
| America (estimated) ... | 800,000 | 700,000 | 650,000 | 600,000 | 700,000 |
| Continent (estimated) ... | 1,700,000 | 2,100,000 | 2,000,000 | 2,200,000 | 2,400,000 |
| Total Bales ... | 8,538,615 | 9,334,214 | 9,956,426 | 9,679,164 | 10,200,000 |

*Uncertain owing to the War.

(From Messrs. J. J. Barrie and Co.'s Annual Chart.)

INDIAN JUTE MILLS ASSOCIATION. *List of Chairmen from the inauguration of the Association.*

| CHAIRMEN | DATE OF ELECTION |
|--------------------------------------|---------------------------------|
| MR. J. J. J. KESWICK .. | November 10th, 1884. |
| MR. JAMES HENDERSON .. | February 11th, 1886. |
| MR. ROBERT WILLIAMSON .. | January 10th, 1887. |
| MR. GEO. CHEPETHAM .. | February 26th, 1890. |
| MR. ALLAN ARTHUR .. | April 17th, 1891. |
| MR. GEORGE LYELL .. | April 7th, 1892. |
| MR. GEORGE N. NAIRN .. | March 4th, 1895. |
| MR. GEORGE LYELL .. | March 19th, 1896. |
| MR. W. B. COLVILLE .. | March 16th, 1897. |
| MR. D. C. BLAIR .. | April 19th, 1899. |
| MR. JOHN NICOLL .. | March 30th, 1900. |
| MR. W. S. MALCOLM .. | March 18th, 1902. |
| MR. JOHN NICOLL .. | February 20th, 1903. |
| MR. ARCHY BIRKMYRE .. | February 26th, 1904. |
| MR. JOHN NICOLL .. | February 27th, 1906. |
| MR. ARCHY BIRKMYRE .. | February 23rd, 1906. |
| MR. A. WIGHTON .. | February 12th, 1907. |
| MR. J. B. STRAIN .. | February 25th, 1908. |
| MR. ARCHY BIRKMYRE .. | February 24th, 1909. |
| MR. R. H. A. GRESSON .. | February 23rd, 1910. |
| MR. J. ROBERTSON .. | February 22nd, 1911. |
| MR. J. MACKENZIE .. | February 21st, 1912. |
| MR. A. R. MURRAY .. | February 19th, 1913. |
| MR. F. R. S. CHARLES .. | February 24th, 1914. |
| MR. W. ROSS SMITH .. | January 27th, 1915. |
| THE HONOURABLE MR. ARCHY BIRKMYRE .. | January 26th, 1916. |
| MR. A. R. MURRAY .. | January 24th, 1917. |
| MR. G. F. ROSE .. | January 27th, 1920. |
| MR. H. M. PEAT .. | April 30th, 1920. |
| MR. D. P. MCKENZIE, M.L.C. .. | January 26th, 1921. |
| MR. R. N. BAND, M.L.C. .. | January 25th, 1922. |
| MR. G. F. ROSE, M.L.C. .. | January 26th, 1923. |
| MR. R. N. BAND, M.L.C. .. | January 25th, 1924. |
| MR. J. SIME .. | January 22nd, 1926. |
| MR. R. B. WILSON, C.I.E., M.L.C. .. | January 21st, 1927. |
| MR. G. F. ROSE .. | February 1st, 1927. |
| MR. J. J. J. KESWICK .. | Messrs. Jardine, Skinner & Co. |
| MR. JAMES HENDERSON .. | Messrs. George Henderson & Co. |
| MR. ROBERT WILLIAMSON .. | Messrs. Finlay Muir & Co. |
| MR. GEO. CHEPETHAM .. | Messrs. George Henderson & Co. |
| MR. ALLAN ARTHUR .. | Messrs. Finlay Muir & Co. |
| MR. GEORGE LYELL .. | Messrs. Macneill & Co. |
| MR. GEORGE N. NAIRN .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. GEORGE LYELL .. | Messrs. Macneill & Co. |
| MR. W. B. COLVILLE .. | Messrs. Bird & Co. |
| MR. D. C. BLAIR .. | Messrs. Finlay Muir & Co. |
| MR. JOHN NICOLL .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. W. S. MALCOLM .. | Messrs. George Henderson & Co. |
| MR. JOHN NICOLL .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. ARCHY BIRKMYRE .. | Messrs. Birkmyre Bros. |
| MR. JOHN NICOLL .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. ARCHY BIRKMYRE .. | Messrs. Birkmyre Bros. |
| MR. A. WIGHTON .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. J. B. STRAIN .. | Messrs. Bird & Co. |
| MR. ARCHY BIRKMYRE .. | Messrs. Birkmyre Bros. |
| MR. R. H. A. GRESSON .. | Messrs. Jardine, Skinner & Co. |
| MR. J. ROBERTSON .. | Messrs. Thomas Duff & Co., Ltd. |
| MR. J. MACKENZIE .. | Messrs. Macneill & Co. |
| MR. A. R. MURRAY .. | Messrs. Thomas Duff & Co., Ltd. |
| MR. F. R. S. CHARLES .. | Messrs. George Henderson & Co. |
| MR. W. ROSS SMITH .. | Messrs. Bird & Co. |
| THE HONOURABLE MR. ARCHY BIRKMYRE .. | Messrs. Birkmyre Bros. |
| MR. A. R. MURRAY .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. G. F. ROSE .. | Messrs. Andrew Yule & Co. Ltd. |
| MR. H. M. PEAT .. | Messrs. Bird & Co. |
| MR. D. P. MCKENZIE, M.L.C. .. | Messrs. Duncan Brothers & Co. |
| MR. R. N. BAND, M.L.C. .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. G. F. ROSE, M.L.C. .. | Messrs. Andrew Yule & Co. Ltd. |
| MR. R. N. BAND, M.L.C. .. | Messrs. Thomas Duff & Co. Ltd. |
| MR. J. SIME .. | Messrs. Andrew Yule & Co. Ltd. |
| MR. R. B. WILSON, C.I.E., M.L.C. .. | Messrs. Birkmyre Bros. |
| MR. G. F. ROSE .. | Messrs. Andrew Yule & Co. Ltd. |

POST OFFICE MONEY ORDERS

*Comparative Statement showing the total number and amount
Jute Mills during the years*

| | | 1924. | | | |
|------------------------|-----|-------|-------------|----|----|
| Names of Post Offices. | | No. | Amount. | | |
| | | | Rs. | A. | P. |
| Alambazar | ... | 16800 | 2,65,907 | 7 | 9 |
| Alipore | ... | 52897 | 8,44,511 | 11 | 0 |
| *Angus | ... | 16725 | 2,95,648 | 14 | 3 |
| *Baidyabati | ... | 14318 | 2,61,538 | 3 | 10 |
| *Bally | ... | 7040 | 1,03,918 | 9 | 4 |
| *Barnagore | ... | 15581 | 2,74,372 | 1 | 5 |
| Barrackpore | ... | 18471 | 3,51,782 | 8 | 2 |
| Barrackpore, R. S. | ... | 10631 | 1,76,914 | 15 | 2 |
| Bauria | ... | 3172 | 49,036 | 2 | 0 |
| Beliaghata | ... | 22020 | 4,14,358 | 3 | 11 |
| Belgachia | ... | 14334 | 3,44,106 | 15 | 6 |
| Belgharia | ... | 2285 | 30,235 | 5 | 4 |
| *Bhatpara | ... | 18188 | 3,48,213 | 14 | 7 |
| *Budge-Budge | ... | 22412 | 4,10,313 | 15 | 0 |
| Chandernagore | ... | 8501 | 1,53,655 | 14 | 5 |
| *Fort Gloster | ... | 8479 | 1,44,645 | 1 | 6 |
| Garden Reach | ... | 29023 | 5,82,999 | 12 | 4 |
| *Garia | ... | 17247 | 3,26,348 | 4 | 8 |
| *Garulia | ... | 14110 | 2,43,815 | 14 | 7 |
| *Ghusuri | ... | 16048 | 2,61,210 | 5 | 0 |
| Gondalpara | ... | 5144 | 83,392 | 15 | 7 |
| Howrah | ... | 65885 | 14,68,244 | 7 | 4 |
| Ichapur Nawabgunj | ... | 11941 | 2,19,392 | 7 | 11 |
| Intally | ... | 33499 | 6,30,140 | 9 | 4 |
| Jagatdal | ... | 30671 | 5,73,237 | 2 | 8 |
| *Kamarhati | ... | 15241 | 2,70,294 | 10 | 7 |
| *Kankinara | ... | 20952 | 4,07,980 | 2 | 1 |
| *Khardah | ... | 11354 | 1,98,059 | 14 | 11 |
| *Konnagar | ... | 6049 | 97,343 | 10 | 10 |
| *Naibati | ... | 16349 | 3,08,240 | 5 | 2 |
| Narkaldanga | ... | 19535 | 3,59,080 | 3 | 9 |
| *Ramkrishnapur | ... | 27583 | 4,98,798 | 5 | 0 |
| *Rishra | ... | 18589 | 3,21,839 | 14 | 5 |
| *Sankrail | ... | 9989 | 1,93,655 | 8 | 11 |
| Scaldah | ... | 30627 | 6,80,180 | 4 | 8 |
| *Serampore | ... | 23960 | 4,08,317 | 5 | 7 |
| *Shamnagar | ... | 7790 | 1,47,140 | 0 | 0 |
| *Sibpur | ... | 35059 | 6,39,444 | 9 | 9 |
| *Sodepur | ... | 2950 | 42,271 | 2 | 1 |
| *Soni | ... | 24750 | 4,39,163 | 3 | 5 |
| *Telinipara | ... | 13983 | 2,53,317 | 0 | 0 |
| *Titagarh | ... | 38923 | 7,97,758 | 0 | 0 |
| Tota Rs. | | — | 1,48,16,726 | 2 | 11 |

The above gives an idea of the Mill worker's savings.

Those marked * may be taken almost wholly jute employees' money, amounting alone to half the above total, besides a large proportion of the other centres.

ISSUED AT MILL CENTRES.

*of Money Orders issued by the Post Offices serving the Calcutta
1924, 1925 and 1926.*

| 1925. | | | | 1926. | | | |
|-------|--|-------------|-------|--------|--|-------------|-------|
| No. | | Amount. | | No. | | Amount. | |
| | | Rs. | A. P. | | | Rs. | A. P. |
| 17548 | | 2,70,700 | 6 6 | 15942 | | 2,36,212 | 3 7 |
| 58257 | | 9,32,568 | 6 10 | 57112 | | 9,86,881 | 15 4 |
| 16466 | | 3,06,967 | 4 6 | 17831 | | 3,28,598 | 9 0 |
| 14045 | | 2,62,397 | 1 2 | 13582 | | 2,50,440 | 5 3 |
| 6191 | | 93,081 | 4 11 | 6451 | | 95,033 | 15 1 |
| 15567 | | 2,69,362 | 14 6 | 17240 | | 2,92,337 | 4 7 |
| 17304 | | 3,25,517 | 2 3 | 12612 | | 2,15,370 | 15 0 |
| 11718 | | 1,97,133 | 11 0 | 18652 | | 3,44,418 | 4 4 |
| 3767 | | 42,267 | 6 5 | 2876 | | 47,799 | 9 9 |
| 22619 | | 4,31,549 | 12 4 | 20753 | | 4,12,899 | 15 4 |
| 15104 | | 2,58,766 | 12 6 | 15069 | | 2,56,340 | 2 11 |
| 2419 | | 33,760 | 0 10 | 2070 | | 29,105 | 11 5 |
| 17131 | | 3,32,542 | 10 9 | 15465 | | 3,06,944 | 0 4 |
| 24400 | | 4,38,349 | 1 11 | 21862 | | 4,15,132 | 11 1 |
| 8573 | | 1,35,897 | 10 9 | 8216 | | 1,43,800 | 4 2 |
| 8261 | | 1,39,766 | 3 6 | 8213 | | 1,38,182 | 0 0 |
| 32394 | | 6,90,966 | 0 8 | 34486 | | 7,11,849 | 10 8 |
| 17667 | | 3,28,670 | 1 6 | 16144 | | 3,01,664 | 9 8 |
| 13728 | | 2,53,219 | 10 6 | 13759 | | 2,45,154 | 4 4 |
| 16956 | | 2,73,767 | 0 0 | 17018 | | 2,65,471 | 7 0 |
| 5112 | | 84,014 | 0 11 | 4578 | | 71,292 | 1 6 |
| 66058 | | 15,20,176 | 5 0 | 73955 | | 16,98,077 | 15 0 |
| 12431 | | 2,19,378 | 0 0 | 13885 | | 2,54,952 | 5 5 |
| 84642 | | 6,65,804 | 0 9 | 35127 | | 6,73,879 | 6 4 |
| 31031 | | 5,33,099 | 6 7 | 31861 | | 5,87,673 | 11 3 |
| 15231 | | 2,78,835 | 5 6 | 14957 | | 2,87,513 | 6 8 |
| 21721 | | 4,31,884 | 10 8 | 222611 | | 4,41,891 | 15 7 |
| 12394 | | 2,13,797 | 2 0 | 12738 | | 2,11,871 | 10 6 |
| 6417 | | 96,718 | 10 3 | 6228 | | 94,530 | 1 7 |
| 18233 | | 3,41,400 | 10 5 | 18387 | | 3,59,860 | 4 5 |
| 20128 | | 3,96,545 | 6 6 | 20032 | | 4,02,044 | 2 1 |
| 25983 | | 4,71,105 | 6 9 | 25451 | | 4,55,159 | 5 10 |
| 18481 | | 3,53,061 | 8 4 | 19140 | | 3,30,855 | 2 0 |
| 9788 | | 2,00,958 | 9 5 | 9476 | | 1,85,080 | 15 5 |
| 31504 | | 6,90,931 | 12 7 | 32465 | | 7,14,518 | 4 2 |
| 22722 | | 3,82,465 | 0 0 | 23187 | | 3,88,307 | 0 1 |
| 8844 | | 1,64,364 | 5 3 | 8910 | | 1,60,076 | 13 8 |
| 34111 | | 6,20,386 | 10 6 | 33746 | | 6,07,354 | 7 2 |
| 2872 | | 88,020 | 2 3 | 3600 | | 43,266 | 5 11 |
| 25207 | | 4,46,129 | 13 8 | 25619 | | 4,83,616 | 5 1 |
| 13940 | | 2,66,853 | 0 0 | 214237 | | 2,45,336 | 13 2 |
| 37523 | | 7,69,268 | 15 0 | 37652 | | 7,39,845 | 11 9 |
| — | | 1,52,07,449 | 9 8 | — | | 1,54,39,832 | 10 2 |

GLOSSARY OF JUTE TRADE TERMS

From I. J. M. Association Annual Report.

I.—JUTE, RAW

Ashmara.—A term denoting weak jute.

Assam.—Jute grown in Assam. In Assam jute occupies 2·5 per cent. of the total area cropped. Districts : Sylhet, Goalpara, Kamrup, Darrang, Nowgang and Garo Hills.

Batch Pat.—Fibre from immature plants, rejected at the time of thinning.

Bogi.—Denotes a class of dark coarse jute.

Bombays.—A recognised mark of pucca baled jute, containing hard, short and barky fibre and inferior to other inferior pucca baled Marks.

Buckchhal.—Is the bark still remaining on the fibre due to the plants having grown in flood water and been exposed to the sun on the flood receding.

Corchorus Capsularis.—One of the two cultivated species of jute grown from rounded seeds. Northern Bengal jute is exclusively grown from this seed.

Corchorus Olitorius.—This seed is principally cultivated in the districts of Hooghly and 24-Parganas. Its distinguishing feature is that its fruit is in the form of pods.

Croppy.—Fibre with top ends rough and hard.

Cuttings.—The portions of jute cut from the bottom or top of the fibre to bring it under a uniform quality.

Daccas.—Bales containing long, hard, coarse jute of superior colour taken from the districts of Mymensingh and Dacca.

Deora.—Denotes “char” or low-lying lands adjacent to the river.

Desi (or Daisee).—Jute grown on the high lands in the neighbourhood of Calcutta—the bulk of it is dark or reddish in colour owing partly to the steeping being done in dirty water.

Deswal.—Jute grown on the western bank of the Jumna River.

Diamonds.—A recognised mark of pucca baled jute packed out of picked fibres of the Mymensingh and Dacca districts.

District Jute.—Jute from the “char” or low-lying lands, coarse and barky.

Dowrahs.—A harsh class of jute grown on the low lands of the Faridpur Division.

Eastern.—Jute grown in the Eastern districts of Bengal, Mymensingh, Dacca, Tipperah, Faridpur, Rungpur, etc.

Fine.—Fibre of superior quality free from coarseness or thickness.

Flabby.—Wanting in firmness or body, loose.

Ful Pat.—Jute cut at its flowering stage, generally excellent in colour.

Guti Pat.—A class of jute grown in the Midnapore district, white in colour but of weak fibre.

Hard.—Jute from districts such as Naraingunge, Chandpur, Akhaura, Choumuhani, etc.

Hearts.—A recognised mark of pucca baled jute of a low weak grade.

Jats.—A term applied to superior jute from the principal growing districts, the fibre of which is long, strong, healthy and of good colour.

Jute Butts.—The short hard roots cut off the ends of jute. They are pucca baled for export.

Knotty.—Knots in the fibre or portions sticking together due to insect bites or punctures in the growing plants. This term may also be applied to knots tied on small hanks of jute to denote a worker's daily production.

Lightnings.—A recognised mark of pucca baled jute made up from the medium Northern qualities.

Mangos.—A recognised mark of pucca baled jute made up from the medium district qualities.

Mossy.—A term applied to the moss which gathers on the stem of jute grown in standing water and adheres to the fibre.

Naraingunge.—This class of jute is grown in the tracts of land watered by the old Brahmaputra River, which are the cleanest water tracts in India, Naraingunge, Chandpur, Mymensingh, Dacca and Tipperah.

Northern.—This class of jute is grown in the tracts of high lands watered principally by the tributaries of the Brahmaputra: Rajshahi, Jalpaiguri, Bogra, Rungpur, etc.

Pat.—Is the Bengali word for “jute.”

Rejections.—Lowest grade of assortments containing fibre which is rejected from higher grades due to varying faults, heavy root, dirt, etc.

Rooty.—A term applied to jute containing heavy roots.

Ropes.—Hand-made ropes used for packing bales and sometimes tendered in rejections.

Serajgunge.—Jute obtained from lands watered by the new Brahmaputra River. This water is not so clean as in the Naraingunge district, Pabna, Bogra, Cooch Behar, Rungpur.

Shuti Pat.—A term applied to white jute.

Soft.—Denotes jute grown in the Northern or Uttaraya districts of Bengal.

Specky.—Jute having small patches of outer bark adhering to the fibre.

Sticky.—Fibre containing broken pieces of sticks, piths or stalks, often caused by the plants being too small to clean properly.

Tossa.—A quality of jute grown from the “Tossa” seed. It grows in almost any district and its characteristics are good strength and low percentage of root. The fibre is mostly of a coarse brownish yellow colour.

Uttaraya.—The Bengali word for Northern Bengal jute.

Western.—Jute from the western districts of Bengal, 24-Parganas, Nadia, Hooghly, Cuttack, Midnapore, Howrah and Burdwan.

II.—FACTORY WEIGHTS, MEASURES, ETC.

Dollop.—A fixed weight of raw material to be spread on a breaker feed cloth in a given time.

Double Warp.—Two threads going into one heddle.

End.—A single unit of sliver or yarn during process of manufacture.

Kachha Bales.—Half-pressed bales of raw material used solely in Indian mills, generally packed $3\frac{1}{2}$ maunds per bale.

Pakka Bales.—Hard packed or pressed bales of raw material used principally for export, packed 405 lb. gross or nearly 5 maunds per bale.

Plain Weave.—Manufacturing fabrics by aid of two cambs only. The shotting is inserted alternately as the odd threads of warp are up and the even down and *vice versa*.

Porter.—The measure by which warp threads in a web are counted, contains 20 splits and indicates the texture so far as the warp is concerned.

Shot.—Denotes one thread of weft running from selvage to selvage, *i.e.*, the width of the cloth.

Simple Twill.—An ordinary twill woven with three cambs.

Split.—One space in the loom reed between the wires, twenty of which make a porter.

Twill Weave.—A weave requiring three or more cambs.

III.—JUTE, MANUFACTURES

Australian Cornsacks (Twill).—A hemmed bag 41 in. long by 23 in. broad, $2\frac{1}{4}$ lb. in weight, 8 porter, 9 shots.

Australian Wool Packs (Twill).—A hemmed bag with attached top measuring 54 in. long, 27 in. broad, and 27 in. deep, 8 porter, 9 shots and $11\frac{1}{4}$ lb. in weight.

Australian Wool Packs (Twill) (Sydney).—A hemmed bag with loose top measuring 54 in. long by 27 in. broad and 27 in. deep, 8 porter, 9 shots and $11\frac{1}{2}$ lb. in weight, including top.

Bagging.—A term applied to double warp plain cloth.

Broad Loom E's.—A hemmed bag made from 30 in. and 32 in. loosely woven D.W. cloth, weight in proportion to 40 by 28 hd. $1\frac{3}{4}$ lb. 5 by 8.

Burlap.—The term applied in the American trade to manufactured single warp hessian cloth.

D.W. C. Bags.—A hemmed bag 40 in. long by 28 in. broad, $2\frac{1}{4}$ lb. in weight, 8 porter, 9 shots, from striped or unstriped cloth.

D.W. C. Bags Light.—A hemmed bag 40 in. long by 28 in. broad, 2 lb. in weight, 8 porter, 8 shots or 7 porter, 9 shots.

Cape Wool Packs (Twill).—A hemmed bag with attached top measuring 54 in. long, 27 in. broad, 27 in. deep, 8 porter, 9 shots, and 10 lb. in weight.

Cement Cloth Twill.—22 in. 13 oz., 11 porter, 12 shots.

Chaff Packs.—A hemmed bag 54 in. long by 27 in. broad by 27 in. deep, weighing 5 lb. 5 porter, 6 shots.

Coffee Twill Bags.—A hemmed bag 40 in. long by 28 in. broad, weighing $2\frac{1}{2}$ lb. or 3 lb. or $2\frac{7}{8}$ lb., or $3\frac{1}{2}$ lb., 7 porter, 9 shots or 8 porter, 8 shots or 8 porter, 9 shots.

Cuban Sugar Bags (Cubans) and Cuban Sugar Twills.—A hemmed bag 48 in. long by 29 in. broad, $2\frac{1}{2}$ lb. in weight, 8 porter, 8 shots or 7 porter, 9 shots.

E. Bags.—A hemmed bag 40 in. long by 28 in. broad, $1\frac{3}{4}$ lb. in weight, 5 porter, 8 shots.

E. Nitrates.—A hemmed bag measuring 36 in. long by 25 in. broad, weighing $22\frac{1}{2}$ oz., 5 porter, 8 shots.

Egyptian Daira Twill Bags.—A hemmed bag measuring 42 in. long by 29 in. broad, weighing $2\frac{1}{2}$ lb. Daira stripe red and blue 8 porter, 8 shots or 6 porter, 8 shots.

Egyptian Grain Sacks.—A hemmed bag measuring 60 in. long by 30 in. broad, weighing 5 lb. or $3\frac{1}{4}$ lb., 6 porter, 8 shots.

Egyptian Sugar Twills.—A hemmed sack measuring 48 in. long by 28 in. broad, weighing $2\frac{1}{2}$ lb., 6 porter, 8 shots.

Fiji Sugar.—Hessian bag, 36 by 22 in., 16 oz., 11 porter, 15 shots.

Fine Twill Sacking Cloth.—A fabric varying in width and weight, also porter and shotting—generally 10 porter, 12 shots.

Flour Bags.—A hemmed bag measuring 56 in. by 28 in. hd. $2\frac{1}{2}$ lb. in weight, 8 by 8.

Gunnies.—A general term applied to manufactured goods.

Heavy Goods.—The term by which Sacking and Bagging are denoted.

Hessian Cloth.—A superior single warp jute cloth.

K. Bags.—A hemmed bag 40 in. long by 28 in. broad, $1\frac{7}{8}$ lb. in weight, 6 porter, 8 shots.

Light C's.—(Vide C. Bags Light.)

Liverpool Twills.—A hemmed bag 44 in. long by $26\frac{1}{2}$ in. broad, $2\frac{1}{2}$ lb. weight, 8 porter, 8 shots.

New Zealand Corn Sacks Twill.—A hemmed bag 48 in. long by $26\frac{1}{2}$ in. broad, $2\frac{7}{8}$ lb. in weight, 8 porter, 9 shots.

Sacking.—Varies from fine twill sacking cloth only in count generally 6-8 porter and 8-9 shots.

Salt Bags (D. W.) Nitrates.—A hemmed bag $37\frac{1}{2}$ in. long by 25 in. broad, 28 oz. in weight, 8 porter, 8 shots, or 8 by 9.

Salt Bags.—A hemmed bag 45 in. long by 26 in. broad, 28 oz. in weight, 6 porter, 8 shots.

Sand Bags.—A selvedged bag 33 in. long by 14 in. broad, w.i.p., 9 oz. for 40 in. (6.14 oz.) 9 porter, 10 shots.

Sand Bag Cloth.—33 in. wide, 7.42 oz. weight per yard—9 porter, 10 shots.

Twills A.—A hemmed bag 44 in. long by $26\frac{1}{2}$ in. broad, $2\frac{5}{8}$ lb. in weight, 8 porter, 9 shots.

Twills No. 2.—A hemmed bag 44 in. long by $26\frac{1}{2}$ in. broad, $2\frac{1}{2}$ lb. in weight, 6 porter, 8 shots.

Twills B.—A hemmed bag 44 in. long by $26\frac{1}{2}$ in. broad, $2\frac{1}{4}$ lb. in weight, 6 porter, 8 shots.

Twill Corn Sacks.—A hemmed bag 44 in. long by $26\frac{1}{2}$ in. broad, $2\frac{3}{4}$ lb. in weight, 8 porter, 9 shots.

Twill Ore Pockets.—A selvedged bag 30 in. long by 20 in. broad, 24 oz. or 28 oz. in weight, 8 porter, 9 shots.

JUTE CULTIVATION

Within the past forty years efforts have been made at different times to introduce the cultivation of jute in various countries, notably in Egypt, where the first attempts were made. But there, as well as in other parts of Africa, the Southern States of the United States of America and Southern China, the results have been unsuccessful. The seed germinated all right, but gave a stunted yield, which, together with the high cost of extracting the fibre, rendered it unmarketable.

The peculiar alluvial soil and warm humid climate from Upper Orissa through Eastern and Northern Bengal seem to stamp this as the one ideal region for raising profitable fibre.

There are two sowing periods. First, on the low lands, which yield roughly about one-third of the annual crop, begins in March or earlier. The second, high land sowings, a month or two later, according to the character of the monsoon.

There is no extensive farming in the cultivation which is still a family industry. Each household of ryots, guided by the prices received for the preceding year's harvest, prepares patches of ground early in the year for the next crop.

Ploughing is done with a stout forked tree branch, usually shod with iron, attached to a wooden yoke resting on the neck against the hump of a pair of native bullocks, and has to be repeated again and again according to the con-



PLATE I. PLOUGHING THE JUTE FIELD



PLATE II. BEATING CLODS OF EARTH IN JUTE FIELD



PLATE III. HEAVY LADDERING (PREPARING THE EARTH)



PLATE IV. HARROWING AFTER THE JUTE SEEDS ARE SOWN

ditions of the ground. Then follows at intervals a heavy laddering process to crush and level down the lumps left by the plough. As the name implies, the implement used is a ladder-built contrivance drawn by bullocks, the driver with the added weight of a companion standing on the ladder to help the surfacing operation.

On the low lands, owing to the annual deposit of rich flood silt, manuring is of small importance compared with the high lands.

As the moist season approaches, and prior to sowing, the ground is light laddered and freed of weeds. The seed is broadcasted along and across the field to ensure even spreading.

Germination takes place in a few days and when the plants reach a few inches in height, the fields are raked by a harrow with wide-set prongs to free the soil about the plants, and weeding is also carried out. When the growth reaches a foot another weeding takes place, also thinning out, which has to be done systematically ; if overdone, branching ensues, while close spacing yields slender stalks.

When the flower appears in about three to four months, the plants are ready for sickling, which is done with a hand hook. In the more submerged tracts the plants have to be cut under water or pulled up by the root. Cutting of the earlier sowings begins in July and continues up to November throughout the districts.

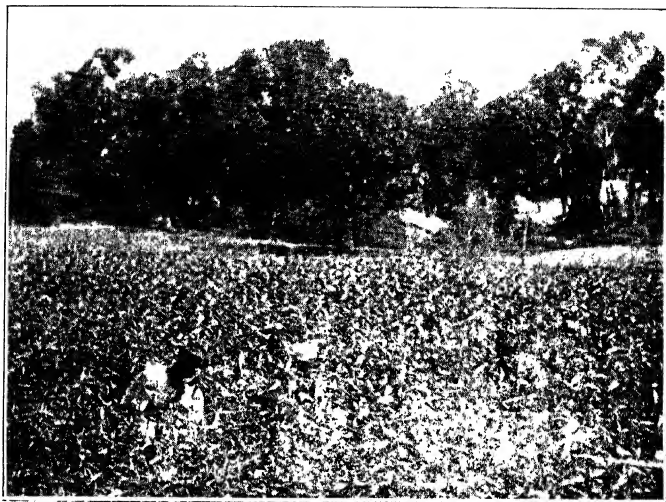


PLATE V. JUTE (THE SECOND WEEDING)

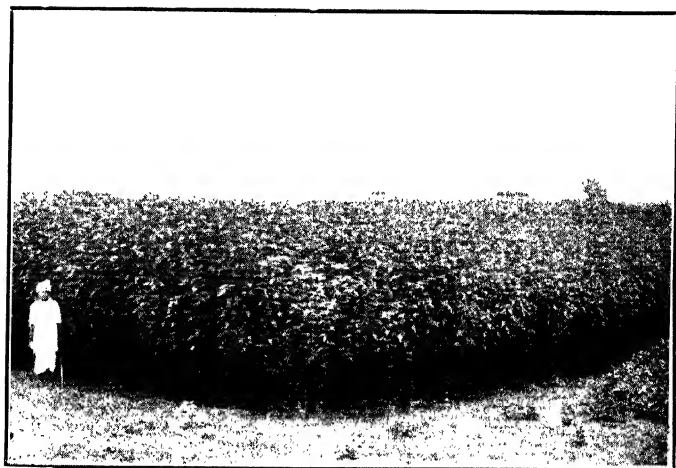


PLATE VI. FIELD OF HIGH LAND JUTE



PLATE VII. CUTTING JUTE

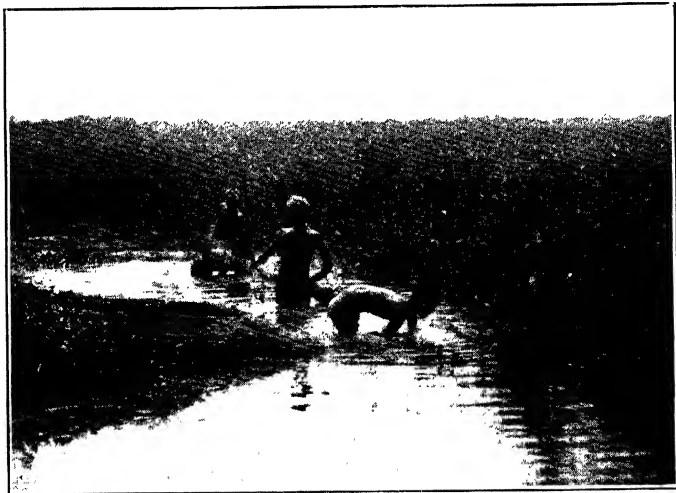


PLATE VIII. CUTTING JUTE UNDER WATER

If cutting is delayed too long after flowering, the fibre deteriorates in colour, strength and lustre. Want of convenient water for retting and sometimes lack of labour are the chief causes of delayed cutting.

The bark, that is the fibre, is released from the stems by water retting, which ferments the gummy part of the outer husk, thus decomposing the connecting tissues and allowing the fibre between the pith stem and the outer husk to be removed. The steeping in running water takes longer than in pools or pits in marshy places, where most of the retting is done, and may last from five to twenty days, according to temperature and supply of water. The prime essential for fibre quality is a timeous supply of clean water for retting.

In *Fibrous Plants of India*, by Dr. Forbes Royle, the retting is described thus :

"The proper point being attained, the native operator, standing up to his middle in water, takes as many sticks in his hands as he can grasp, and removing a small portion of the bark from the ends next the roots, and grasping them together, he strips off the whole with a little management from end to end, without breaking either stem or fibre. Having prepared a certain quantity into this half state, he next proceeds to wash off; this is done by taking a large handful; swinging it round his head, he dashes it repeatedly against the surface of the water, drawing it through towards him, so as to wash off the impurities; then, with a dexterous throw, he fans it out on the surface of the water and carefully picks off all remaining black spots. It is now wrung out so as to remove as much water as possible, and then hung up on lines prepared on the spot to dry in the sun."



PLATE IX. RETTING JUTE



PLATE X. BEATING JUTE WITH MALLETS (THAPANS) AND
EXTRACTING FIBRE



PLATE XI. WASHING JUTE.



PLATE XII. CARTING JUTE TO HAT (MARKET)

So far attempts to improve on this simple method of extracting the fibre by mechanical and other means have proved to be not only too costly, but detrimental to quality.

When dried, the fibre is put up into bundles and boated or carted to the nearest of the rural markets which are scattered all over the district. There it is sold to local middlemen, who, having sorted it into drums, send some of it to the Calcutta market, where it is sold to the local mills, or to Calcutta balers, to be graded at the Press houses into pucca bales for export. The rest is sent to upcountry baling centres to be graded into bales, either cutcha for the Calcutta mills or pucca bales for export via Calcutta or Chittagong.

The natural percentage of moisture in sound fibre is about 8 per cent., but the honest ryot has been blamed for watering his jute. The real culprit, however, is one or other of the various middlemen who, when buying competition runs high in the interior markets, pay top prices to the ryots and secure a profit by deliberately watering their purchases to the detriment of the fibre and the disappointment of the ultimate buyer of the drummed or baled article. This nefarious practice is so widespread, being often repeated as the jute passes between various up-country dealers when market prices sag, that the marvel is that consumers, in the absence of Government aid, have not themselves adopted measures to suppress it.



PLATE XIII. DRUMMING JUTE (THE FIRST ROLL)

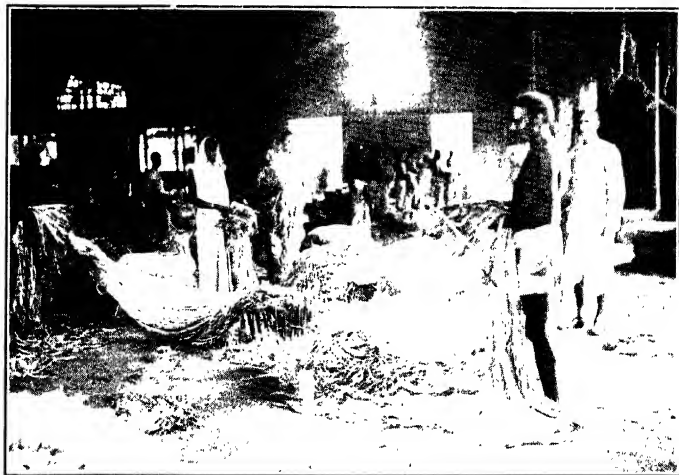


PLATE XIV. ASSORTING JUTE IN GODOWN



PLATE XV. GENERAL VIEW OF NARAINGUNGF

Hitherto the ryots have grown practically all their own seed requirements without much regard to selection. This, together with inefficient manuring, so at least it is alleged, affected both quality and yield adversely. But fibre experts under Government have for a number of years past been labouring at experimental farms trying to discover improved methods of cultivation and the varieties of seed which will produce both quality and quantity in the various districts. The growers are being advised, and offered supplies of seed on easy terms. This eventually may prove beneficial to themselves and help to preserve quality and increase the annual crop outturn.

The illustrations, produced by kind permission of Messrs. Johnson and Hoffman, will enable non-jute readers to follow the work in the jute fields

RIVER HOOGHLY
— SHOWING JUTE MILLS —

